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THE EYE AND THE ENDOCRINE ORGANS *

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Few subjects have claimed more of the attention of the research worker, the internist and the anatomist in the past decade than the function, anatomy, pathology and interrelation of the ductless glands. As a result, our knowledge of these matters has been greatly increased and the literature has now reached voluminous proportions.

The increasing interest in these organs by the ophthalmologist is well shown by the fact that since I began collating the literature for this address two other essayists have anticipated me. In January of this year there appeared an admirable summary of the established facts in the relation between the internal secretions and the eye by the late Dr. Schirmer, and a less comprehensive article by Lisser in September, 1916, from both of which I have freely drawn.

It is my purpose to bring to your attention not only facts but also what is still within the domain of speculation, hoping thereby to stimulate research to determine the value of such theories. I shall consider the subject from the aspects of experimental and indirect evidence, clinical evidence, toxic effects from the internal administration of the glands, indirect pathologic relation, suggestive etiology, and therapeutic uses of the glands in diseases of the eye.

EXPERIMENTAL AND INDIRECT EVIDENCE

The close topographic relation of the parathyroids to the thyroid and sympathetic nerves makes it difficult both in human surgery and in animal experimentation in operating on one structure to keep the other inviolate, and it is therefore difficult to decide in what relative degree the involvement of these structures is responsible for the resulting symptoms.

Thyroid Gland.—Gley and Rochon Duvigneaud found, from experiments on dogs, that in some instances after extirpation of the thyroid gland the cornea became porcelain white, leading at times to ectasia and superficial ulceration. Microscopically leukocytic infiltration was found. Leber, nevertheless, suggests that the appearances indicate, as the cause, a toxic endothelial necrosis. These investigators also saw produced an acute blepharitis with abundant lacrimation. Halstead noted conjunctivitis, and as a further complication partial blindness without ophthalmoscopic changes.

Following complete excision of the thyroid and parathyroids, in several instances Edmunds also encountered keratitis resembling syphilitic interstitial keratitis, in some cases unilateral and in others bilateral; but as its occurrence was usually associated with tetany leading to death, he believes it would in all cases have been bilateral had the animal lived. As a result of a similar operation, this author saw double cataract develop. Coats, who examined the lenses, was of the opinion that it was undoubtedly due to degenerative changes connected with the removal of the thyroids and the convulsions which followed.

While Edmunds believes that the altered secretion of the thyroid and parathyroids, produced by interference with the nerve supply, is more inimical to the nutrition of the cornea than the toxins produced by the complete removal of the glands, de Quervain is convinced that tetany thyropriva, as produced experimentally in animals, is the result of a toxemia of the entire nervous system, especially the brain, and is certainly due neither to injury to the neighboring tissues in the neck nor to the operation per se.

In tetany thyropriva, Falta and Kahn found spasm of the ciliary muscle and hypersecretion of tears.

Parathyroids.—There is some experimental evidence to indicate that disturbed function of the parathyroids alone can cause cataract. While the experiments of Erdheim showing that in parathyroidectomized animals there is a diminished calcification of the dentin and a hyperplasia of the enamel which frequently leads to fracture of the teeth, and those of MacCallum, Voegtlein, Leopold and von Reusz, which demonstrated a decrease in the lime secretion and a diminution of the bone salts, do not have a direct bearing on established relationship between the parathyroids and the eye, they do direct one's thoughts to the possible bearing of these findings on the syndrome of blue scleras and friability of the bones.

The view of Jeandelize that many convulsive disorders of man (convulsions of childhood, epilepsy and eclampsia) are due to parathyroid insufficiency, together with the experimental evidence adduced, strengthens the assumption that relative insufficiency of the secretion of these glands is an important factor in the etiology of zonular cataract.

Suprarenals.—In from five to ten seconds after the intravenous injection of epinephrin in rabbits and cats, the pupil begins to dilate, the nictitating membrane to retract, and slight ptosis to occur. These phenomena reach their height in from five to twenty seconds, and last about two and a half minutes longer. In dogs, after medium doses, there is miosis, enophthalmos and adduction of the eye, probably through oculomotor stimulation from increased intracranial tension. Toxic doses, however, produce dilatation of

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the pupil. In man, in the presence of paralysis of the sympathetic, the conjunctival instillation of epinephrin produces mydriasis. From observation of the constant use of epinephrin in daily practice for a number of years Santos-Fernandez finds that it only infrequently produces mydriasis. According to Nieden, the local use of epinephrin diminishes lacrimal secretion, and we are all familiar with the contraction of the vessels which results.

When a 1 per cent. solution of epinephrin is instilled into the conjunctival sac of animals deprived of the thymus gland, epithelial bodies or thyroid gland, the pupil becomes dilated in all, but with this difference: that where the thymus has been extirpated, it occurs only after the lapse of weeks, whereas after extirpation of the thyroid it occurs within a few hours. In the presence of pancreatic lesions, repeated instillations produce dilatation of the pupil. In exophthalmic goiter and during the administration of thyroid extract dilatation of the pupil may occur when epinephrin is instilled into the eye. This is due probably to the increased irritability of the sympathetic.

According to Bayer, the contradictory observations on the effects of epinephrin on intra-ocular tension have been brought to agreement by the studies of Ruberts which have shown that when epinephrin of the usually applied strength is instilled into the normal eye it causes no fluctuation of the tension, while in the glaucomatous eye this is very marked. First there is a diminution, then an increase, and finally a decrease. In glaucomatous eyes it must therefore be used with caution.

Pineal Gland.—There is no evidence to show that perversion of the secretion of this body is capable of producing any disturbance of the functions of the eye, nor is it at all likely that the ocular symptoms associated with teratomas of this organ are due to other than the pressure exerted on neighboring structures.

It is of sufficient interest to note that the epiphysis cerebri is, in the words of Lord, "a rudimentary structure, developmentally the representation of the median eye present in some animals." This is also the view of Barratt, who says it is not correct to speak of the whole diverticulum, or even any part of it still existing, as the "remains of a median eye or as a vestigial eye."

Both Ogles and Campbell found, in cysts of the pineal gland, cells of varying shape filled with coarsely granular dark brown pigment, and think that they may represent the pigment cells of the retina.

Pituitary Body.—Without more definite experimental data we must consider the ocular phenomena associated with disease of the pituitary body as due to direct pressure and increased intracranial tension; but there are symptoms, notably the "antecedent amblyopia" of de Schweinitz, the frequent variability, and at times transient nature of the disturbed function, and the beneficial effects of glandular therapy on the amblyopia in some cases of undoubted hypophysial disease, that suggest the possibility that in some cases disturbed secretion is a factor. Furthermore, Uhthoff points out that cases have been recorded in which the ocular condition, particularly the disturbance of motility, more especially the oculomotor, was induced by changes in the basal nerves not the result of pressure.

Schirmer directs attention to the fact that the symptoms in the syndrome to which Oppenheim first called attention and to which he has given the name "tabes pituitaria" are attributed to degenerative changes in the lumbar spinal cord due to the action of pituitary secretion, and comments that if this be admitted, a similar influence on the optic fibers is just as likely, and he prophesies that the time will come when certain cases of optic atrophy will be found to be of hypophysial etiology.

CLINICAL EVIDENCE

Time does not permit, nor would it be appropriate on this occasion, to give a careful analysis of the many eye symptoms and their variations dependent on the nature and extent of the disease of the pituitary body, yet we cannot be contented with their mere enumeration. According to de Schweinitz, one of the earliest ocular symptoms is "antecedent amblyopia" a form of blurred vision which antedates by a long period of time the objectively determinable amblyopia or any failure to read normally the ordinary test types, although the patient is conscious of a definite mist often in the central area. It may be unilateral and is probably by no means constant. Cushing and Parsons have also observed this symptom.

Visual Field Defects.—Coming now to the more definite phenomena, I shall first consider the visual field defects. As is well known, the typical field defect is a bitemporal hemianopsia, which is present in at least 40 per cent. of all cases; but we should give great weight to the assertion of Cushing that homonymous hemianopsia is by no means uncommon. According to Uhthoff, however, in the absence of acromegaly it is very rare. The development of the heteronymous defect from a superior temporal slant of the peripheral field, and the precedence of a hemichromatopsia are always to be borne in mind. As has been pointed out by several authors, notably by Weeks, Cushing and Evans, and emphasized by de Schweinitz, the boundary line between the seeing and the blind fields is not usually regular or vertical, and as Wilbrand and Sanger assert, there is probably always a preservation of the macula, but in some cases it is so limited as to be overlooked in the field taking.

While the frequency with which scotomas are present has been probably underestimated, yet, as will later be brought out, the very fact of their occurrence has doubtless led to mistakes in diagnosis. De Schweinitz and Holloway have classified these scotomas thus: 1. Small and paracentral with the possibility of their expanding into complete hemianopsia. 2. An absolute or relative defect up and out, forming a quadrant. 3. Scotomas varying in size and position with a possibility of their disappearing. 4. Large paracentral absolute scotomas in the outer halves of the visual fields. 5. Temporal field scotomas at some distance from fixation, manifested at some considerable time before the entire field is obliterated. 6. An antecedent amblyopia prior to the development of the central scotoma.

The amblyopia and the amaurosis usually develop slowly, though sudden blindness, just as sudden recovery of central vision or the sudden restoration of vision in the formerly blind field, is not unknown. Variations in visual acuity as well as in the extent of the visual field, from day to day, or even within shorter periods of time, are somewhat characteristic. According to Uhthoff, the dictum of Marie and others that the reduction of vision to blindness is a fundamental symptom of acromegaly is untenable.

Ophthalmoscopic Findings.—The preponderance of primary pressure atrophy over other disturbances of

the optic nerve is only what is to be expected from the nature and position of the intracranial lesion. The relative frequency of the occurrence of optic atrophy, papilledema and optic neuritis with and without acromegaly, according to Uhthoff's tables, is 20, 9 and 8.5 per cent., optic neuritis, including papilledema, occurring twice as frequently when acromegaly is present than when it is absent.

Disturbances of Musculature.—Oculomotor palsy is by far the most frequent type, and was present in Uhthoff's tabulation in 15 per cent., whereas all other forms of paralyses were seen in but 6.5 per cent. Only rarely is the superior oblique involved. The state of the pupils is dependent on the degree of intracranial pressure and the amblyopia. The occurrence of the hemianopic pupillary inaction sign is still in question. Nystagmus occurs in only a small percentage of cases.

Occasional Phenomena. — Visual hallucinations, which have been noted in a few instances, are not to be considered as of localizing importance, as they may occur with tumors situated almost anywhere within the cranium, as pointed out by Spiller. Evans alone speaks of cyanopsia. Exophthalmos has been observed as a phenomenon of congestion. Persistent photophobia has been occasionally seen, especially after operative interference (de Schweinitz and Holloway). The pigmentation of the skin of the lids is probably due to associated disturbance of the suprarenals. Difficulty of eversion of the lids and thickening of the palpebral glands are mentioned by de Schweinitz.

Tumors of the Pineal Gland.—According to Oppenheim, tumors of the pineal gland cause almost the same symptoms as tumors of the corpora quadrigemina; in the former, however, the oculomotor, trochlear, and abducent nerves are not so often affected, but nystagmus is more common. Frankl-Hochwart believes that when the foregoing symptoms are associated with an abnormal increase in stature, an unaccustomed growth of hair, obesity, drowsiness, and a premature genital and sexual development with evident precosity of adolescence, we must think of tumor of the pineal gland.

AFFECTIONS OF THE THYROID

Exophthalmic Goiter.—In view of the fact that some of the gravest symptoms of this affection may exist in the absence of either or even both of the phenomena from which it has received its most commonly given name, and that its pathogenesis is now known, it would seem more appropriate to speak always of this syndrome as "hyperthyroidism."

In the majority of the cases of hyperthyroidism, at some period, the eye symptoms dominate the clinical picture. The retraction of the upper lid, to which the striking and pathetic facies is due, is often the symptom which first calls attention to the existence of the disease. Associated with this we usually find loss of coordination between the downward movement of the globe and the upper lid, and occasionally the difficulty of eversion of the upper lid, and Kocher has observed that when an object fixed by the eye is moved rapidly up and down, it causes a convulsive momentary contraction of the upper lid, while Joffroy has noted a failure of the skin of the forehead to wrinkle when the patient looks up.

Under the term "deficient complementary fixation in lateral eye rotation," Suker has recently described an ocular symptom of hyperthyroidism. After extreme lateral rotation of the eyes either to the right or to the left with the head fixed and with fixation of an object at this point maintained for a second or two, on attempting to follow this fixation point as it is rapidly swung into the median line, one of the eyes — it may be either — fails to follow the other in a complementary manner into proper convergence and for this point when it is brought into the median plane. Either the right or the left eye makes a sudden rotation into the fixation with its fellow, but before it does so, an apparent divergent strabismus is manifested. According to Suker, it is no doubt due to a dissociation in the functions of the sympathetic and the extraocular motor nerves of the eye, and perhaps also to exhaustion on extreme lateral rotation of the eyes.

Periodicity and incompleteness in the act of involuntary winking comprise a less constant lid sign. Exophthalmos may precede or appear coincidently with the foregoing symptoms. Rarely it is unilateral and then may be accompanied by dilatation of the pupil. In some cases the proptosis indirectly leads to a destructive keratitis. A subjective accompanying symptom is a feeling of pressure behind the eyeball. Along with alopecia, which is not an uncommon symptom, there is falling out of the eyebrows and eyelashes. Less frequently observed symptoms are: epiphora, or, in some cases, deficient lacrimation; pigmentation of the upper lid, which is probably due to suprarenal insufficiency; tremor of the eyeball, and weak convergence and paresis of the ocular muscles, in the form of bilateral ophthalmoplegia externa, of the associated muscles and individual muscles. Nystagmus is a rare symptom. The occasional existence of an ocular bruit has been much discussed pro and con. Riesman has recently revived interest in the question, having heard it in two cases. He states that it was first described by Snellen and Schonfeld. Carrington and Drummond also give clear descriptions of it. Riesman speaks of it as a rhythmic murmur keeping time with the pulse and not to be confounded with a more or less continuous hum evidently due to the muscular movements of the eyeball. Roemer, in discussing the symptom, states that Hering has proved it to be due to activity of the orbicularis.

Becker has observed lateral displacement of the light streak and pulsation of the retinal arteries synchronously with the radial pulse. Rarely optic neuritis and optic atrophy are observed. In view of the observations of Coppez, Standish and others that these symptoms can result from the ingestion of thyroid extract, and the experimental demonstration by Birch-Hirschfeld and also by Nabuo-Inouye that ganglion degeneration of the retina, and optic atrophy may follow thyroid toxemia in dogs, it seems strange that affections of the optic nerve are not encountered more frequently.

ATHYROIDISM

Myxedema.—In this condition, in which the changes in the thyroid are chiefly atrophic, the edema of the eyelids with the consequent narrowing of the palpebral fissures is the most marked ocular phenomenon. The edges of the eyelids are hyperemic; the eyebrows are elevated and the hairs and cilia are sparse and brittle. Subconjunctival hemorrhages may occur. Other symptoms are lacrimation, asthenopia, neuroretinitis (Wagner) and superior-temporal contraction of the visual field (Ottolenghi).

Petzetakis studied the oculocardiac reflex in six persons with myxedema and found it enormously intensified over what is observed in normal persons.

He believes that the hypothyroidism leaves the sympathetic without the normal stimulation of the thyroid, and as a consequence vagotonus results. In one case the normal balance was restored by thyroid feeding.

Cretinism.—In this condition, which has been called infantile or juvenile myxedema, besides the conditions just enumerated, there is a wide spacing of the eyes. A conjunctivitis which is sometimes present has been attributed by Hitschmann to the interference with drainage, the result of the saddle bridge.

In both of the foregoing conditions it has been noted that the mydriatic effect of homatropin and similar drugs persists beyond the usual time.

Mongolian Idiocy.—Because of a slight outward resemblance with the foregoing two affections and because of the improvement resulting from the use of thyroid extract, some modern clinicians suspect a thyroid origin for the Mongolian type of idiocy, in which the eye symptoms of epicanthus and convergence of the palpebral fissures have originated the terminology of this affection.

Papilledema Due to Thyroidectomy.—Krauss has reported a case of papilledema in a man, aged 23, coming on after thyroidectomy and first observed eight weeks after the operation. Although the parathyroids had been carefully avoided, the operation was followed by a toxemia inducing tetany. Central vision was about normal and the fields showed partial color reversal with peripheral transient scotomas; but the distinctive feature was said to be the slight cutting of the form field with abnormally large color fields. There were prodromal attacks of absolute blindness immediately after the operation. The retinal edema extended from the peripapillary region along the course of the vessels.

Cataract Following Thyroidectomy.—After thyroidectomy in a woman, in which the operation was followed by tetany, Westphal saw double cataract going to maturity in five years; and Schiller observed bilateral cataract develop within six months after partial removal of a goiter in which the operation was followed by tetany.

The occurrence of tetany in all of these cases suggests an insult to the parathyroids as the probable essential factor in the postoperative symptoms.

The influence of the parathyroids in the causation of senile cataract has engaged the attention of Fischer and Triebenstein and also of Heschler; but the conflicting evidence prevents definite conclusions at this time. The former claim to have found signs of latent tetany in 82 per cent. of sixty-eight patients with senile cataract, whereas in control patients of the same age the percentage of tetany was less than 20. Heschler, however, found but 2 per cent. of tetany in fifty cases of presenile and senile cataract.

THYMUS GLAND

Garre found that in 95 per cent. of fatal cases of exophthalmic goiter there was a persistent hyperplastic thymus. An interesting case showing the influence of persistent thymus on the production of the symptoms of exophthalmic goiter is that of von Haberer. Notwithstanding that the patient had had part of the thyroid removed and the thyroid artery going to the remaining thyroid tissue ligated, his condition became desperate. Removal of a fragment of the thymus produced an amazing improvement with a return to the normal both subjectively and objectively, in three months' time.

Halstead records cases of exophthalmic goiter in which ligation of the thyroid arteries and thyroidectomy failed to check the disease, but thymus feeding, radium and Roentgen-ray applications caused remarkable improvement.

TOXIC EFFECTS OF THE INTERNAL ADMINISTRATION OF THE GLANDS

Hyperthyroidism from Use of Thyroid Extract.—Standish, writing in 1916, found recorded in literature eight cases of retrobulbar optic neuritis due to the ingestion of thyroid extract, and added three cases, one of acute development, of his own. The ophthalmoscopic appearances varied from the normal to a slight papilledema, turgid veins and retinal hemorrhages. Of the eleven patients, seven were females, three males, and in one the sex was not stated. The preponderance of the female sex is to be attributed to the fact that thyroid extract is one of the ingredients of many of the proprietary remedies for obesity.

SUGGESTIVE ETIOLOGY

There are many conditions of obscure etiology exhibiting changes which have been ascribed to altered metabolism, autotoxemia and abiotrophy. In view of this, as our knowledge of the function of the ductless glands enlarges, many are suspecting that a fault in one or more of these, reacting on the others, may be the cause of some of these conditions.

Hereditary Optic Nerve Atrophy.—In support of his contention that Leber's disease is primarily due to an inherited temporary disorder of the pituitary body, J. H. Fisher brings forward the following facts: that Leber noticed a great tendency for the visual defects to appear at or about the age of puberty and that evidence of a neuropathic type was afforded by such symptoms as headache, vertigo, tremors, numbness of all the limbs, or even epileptic fits; that in several reported cases there were similar symmetrical field defects; that patients with Leber's disease, as also those with rapidly developing pituitary body growths, often complain of subjective phenomena of light and colors often as "seen through a blue mist;" that variation in the degree of central amblyopia which occurred in Leber's disease is more consistent with an outside influence on the visual pathways than with primary changes in the nerve fibers; that in both conditions there is an epochal relation between the onset and the period of puberty and the climacteric and that in both, frequently in early stages of the disease, a very mild papillitis can be detected. In one of two affected children of a family, roentgenoscopy of the skull was negative, while the other showed a cellular or honeycombed shadow in the depression of the sella turcica. That similar changes were not found in the two cases he attributes to the fact that the negative finding was in a case of two years' standing. As the visual symptoms in Leber's disease are progressive up to a certain point and then come to rest, he argues that if the lesion which gives rise to these symptoms is due to some disorder of the pituitary body it also must needs be temporary and transient. He also makes the practical suggestion that cases of tobacco amblyopia with glycosuria be subjected to a more thorough critical investigation than we are accustomed to give them because of cases that are on record in which Leber's disease was complicated by glycosuria. Climenko, however, in two cases of Leber's disease failed to find symptoms pointing to disturbed internal secretion.

Hypothyroidism and Optic Atrophy.—The possibility of hypothyroidism producing optic neuritis terminating in atrophy is indicated by the occurrence of consecutive atrophy in two brothers and a sister who with other members of the family had general symptoms of hypothyroidism in a case reported by van Lint and Klesfeld. The visual fields showed peripheral contraction without scotoma. The roentgenograms revealed no lesions of the sella turcica.

Ocular Syndrome of Disturbance of the Internal Secretions.—Lamb describes a syndrome which he believes to be the initial group of ocular symptoms dependent on disturbance of the internal secretions. They are dilated and unequal pupils responding promptly to light and accommodation, eye ache, severe headache, chorioretinitis affecting more markedly the macula region and worse in the eye with the more dilated pupil. This is associated with a low grade ciliary congestion also in the eye with the larger pupil, usually the left one. Lacrimation and dryness of the conjunctiva may be present. There is a marked tendency to exophthalmos. The majority of these symptoms Lamb would explain by supposing an oversensitization of the tissues by the thyroid hypersecretion appearing in the blood, and in the presence of epinephrin producing a very definite excitation of the sympathetic nerve endings or "plates of Langley." The exophthalmos, insufficiency of convergence, asthenopia and ciliary congestion are due to fatigue following overstimulation. The chorioretinitis may be due to some direct effect of epinephrin on the pigment cells, or the result of exposure because of dilatation of the pupil over a long period of time, or to both.

Pigmentary Degeneration of the Retina.—Jones sees in many of the symptoms, general as well as ocular, of pigmentary degeneration of the retina, indication of disturbance of the ductless glands as an etiologic factor. Therapeutic measures based on this assumption have yielded him good results.

Osteitis Deformans.—The failure to find a causative factor for Paget's disease and because the pathology indicates a disturbance of metabolism which brings about the changes in the bones which resemble, clinically and experimentally, those encountered in disturbances of the ductless glands, have led to the belief on the part of some that the cause will be proved to be due to perverted action of these glands. The only records of ocular findings in this disease available are those of Copez, who found in four cases pin point yellowish-white spots, presumably degenerative, in the retina; in two cases retinal hemorrhages, and in one, diplopia from displacement of the pulley of the superior oblique muscle.

Amaurotic Family Idiocy—The myasthenia, the periodic convulsions, the fact that a toxemia which has usually been assumed to be the cause of Sach's disease can scarcely be a direct one because the disease is familial, and finally that lesions have been found in the suprarenals by Church, in the thymus by McKee, and that in one case Gordon found enlargement of the thyroid and in another atrophy, and that the symptoms of the disease are similar to those arising from epinephrin insufficiency have led Sajous to the belief that this disease is produced by a toxin which provokes organic lesions in the ductless glands, particularly in the most vulnerable of these, the suprarenals, when there is in these a congenital vulnerability which inhibits their power to sustain metabolism and nutrition of the central nervous system, and the muscular and cardiovascular systems.

INDIRECT PATHOLOGIC RELATION

Secondary Hypernephroma of the Iris and Ciliary Body.—An association of one of the endocrine organs and the eye, of interest pathologically, is to be found in the case reported by Chance of secondary hypernephroma of the iris and ciliary body in which the primary tumor developed from a suprarenal rest in the left kidney. There were secondary growths elsewhere than in the eye.

Verhoeff calls attention to a case of epithelial tumor of the ciliary body, reported by Schlipp, and described by the latter as an unusual form of endothelioma, as probably one of secondary hypernephroma.

Keratoconus.—Based on the Abderhalden dialysis method, von Hippel found disturbance of metabolism of the internal secretory glands in two typical cases of keratoconus, and in a corneal condition closely allied to it. The thymus was found involved in all three, and in one solely. In two, the suprarenals gave a strong positive reaction. In one the thyroid gave a negative reaction, in one, a doubtful reaction and in one a weakly positive reaction.

GLANDULAR THERAPY

Glandular therapy has its justification in an attempt to meet two indications — a deficient or altered glandular secretion and a profound inanition due to disturbed metabolism in the absence of any direct evidence of disease of the ductless glands.

In combating the ocular manifestation of disorders of the hypophysis, pituitary extract of either or both portions of the gland and thyroid extract have been employed apparently with success.

The following brief summary is taken from de Schweinitz's report of cases of pituitary body disease and the results of treatment: 1. Tumor of the pituitary body; complete blindness lasting twelve days in the right eye and six weeks in the left; complete restoration of the vision of the left eye under the influence of large doses of thyroid extract associated with inunctions of mercury. 2. Moderate choked disk with complete blindness of the right eye lasting one week, and partial blindness of the left eye with loss of the nasal field; complete restoration of the visual functions under the influence of the administration of thyroid extract associated with inunctions of mercury.

The same author jointly with How reports an interesting case of atrophic pallor of the optic nerves with paracentral scotoma in the right eye and later bitemporal hemianopsia with marked impairment of central vision, marked enlargement of the pituitary fossa, with deepening of the pituitary pit and decided thinning of the posterior clinoids. After three weeks' administration of anterior lobe extract and thyroid extract, decided improvement in vision resulted. Later, vision of the right eye steadily improved, and that of the left steadily declined over a period of seven months. At the end of two and one half years, visual acuity equaled $\frac{6}{5}$ and the fields were normal in each eye. During that period the patient consumed 2,100 tablets of 2½ grains each of thyroid extract and extract of the anterior lobe of the pituitary body.

Elsberg and King record a case of dyspituitarism with glandular insufficiency and cyst formation in which there were bitemporal hemianopsia, great impairment of central vision and pallid disks. One year later the field had changed to right homonymous

hemianopsia, but subsequent to a decompression operation again became heteronymous. Four months' treatment with pituitary extract resulted in marked enlargement of both fields in the nasal area.

Tumme's case was also one of dyspituitarism with limitation of the visual fields, failure of central vision and pallor of the optic disks. Under the use of thyroid extract alternating daily with whole gland pituitary extract, fields and visual acuity were normal two years later.

A convincing case of the value of organotherapy is that of Clothier and Devitt, quoted by Reber. A man, aged 39, had bitemporal hemianopsia and hyperpituitarism with enlargement of the pituitary body as determined by the Roentgen ray. Under the administration of thyroid and pituitary gland, in four months there was reestablishment of full form and color fields. After an interval of two years of nontreatment, incomplete vertical hemianopsia in the right eye, and marked contraction of form and color in the left eye were present. After twelve months of the glandular treatment, vision and fields returned to normal. In this case, the administration of either gland alone was without result.

The employment of organotherapy in the treatment of hyperthyroidism is of questionable justification, although there are those who assert that in the later stages of the disease the onset of symptoms of myxedema is an indication for the use of thyroid extract. Risley lends the weight of his authority to the use of thyroid extract in the treatment of interstitial keratitis in subjects whose insanition and mental turpitude indicate a lowered metabolism. He argues that the drug does good by improving the action of the thyroid gland, whose secretion has been diminished by the general lowered vitality.

In the treatment of a condition to which he gives the name "malignant uveitis," Bordley has employed thyroid extract with brilliant results. In all, eight cases were treated, four with marked success, two doubtful and two failures. He does not wish to infer from this that this disease is necessarily a symptom of cretinism or myxedema.

Muncaster has found thyroid extract in combination with epinephrin and sodium cacodylate of benefit in cases of pigmentary degeneration of the retina and in old pigment deposits in the fundus.

More recently, Jones has suggested organotherapy in pigmentary degeneration of the retina.

Phillips reports favorable results from the transplantation of epithelial bodies in the treatment of cataract.

Along with the general symptoms of cretinism and myxedema the ocular lesions also undergo improvement with thyroid feeding.

The local use of epinephrin for congestion of the conjunctival and ciliary vessels is no longer promiscuous and its employment in glaucoma is of doubtful value. Its use for the prevention and control of corneal staphyloma is recommended by Pontius. It is of material assistance in the prevention and control of bleeding in ophthalmic surgery.

A Popular Diet Error.—The popular idea that "most people eat too much," which one hears expressed in common table talk, is not true. People who do not change in weight eat just enough to maintain the condition in which they have established themselves. They may, however, lose their surplus fatty tissue by restricting their diet.—Graham Lusk in *Science*.

TREATMENT OF INTESTINAL AMEBIASIS

WITH SPECIAL REFERENCE TO IPECAC AND ITS DERIVATIVES *

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Dysentery is a symptom of intestinal disease, and there are a large number of agents that may produce the intestinal disorders which lead to this symptom. Before the discovery of the various etiologic agents which may cause dysentery, its treatment was purely empiric and symptomatic. It was in this stage of our knowledge that ipecac was introduced as a form of treatment, and it was administered indiscriminately in all forms of dysentery.

The differentiation of etiologic types of dysentery has led to appropriate forms of treatment, and any discussion of the treatment of this disease must take into consideration the causative agents, and known facts concerning those agents. Therefore, I have prepared a brief summary of certain points in the history of our knowledge of amebas, as it is the treatment of the disease they produce that I wish to discuss.

In 1875, Lösch,[1] in a case of dysentery, described an organism which he called *Amoeba coli*. He reproduced the disease in dogs by injecting them with recently passed stools from this patient. His conclusion was that the *Amoeba coli* was not the primary cause of the disease, but that it was certainly capable of increasing a lesion of the large intestine already present, or at least of preventing its healing. Following this, numerous observers found the amebas in the stools and associated them with dysentery. In 1885, Kartulis,[2] from a study of over 500 cases, propounded the theory that typical dysentery was caused by amebas, as were also the liver abscesses that often accompany it. He found the amebas regularly in the stools of dysenteric patients, in ulcers of the large intestine, and in pus from liver abscesses, and he infected cats by rectal injection of dysenteric stools. Opposition to the theory of Kartulis was based on the rare finding of amebas in some places in which dysentery was endemic, and on finding them in various kinds of intestinal diseases and in healthy subjects.

The question now was to decide if there was a specific amebic colitis, and whether or not there are several species of intestinal amebas. In 1891, Councilman and Lafleur[3] did much able work on dysentery, and as a result of their work the question of the existence of a specific amebic colitis was settled. These authors renamed *Amoeba coli* Lösch as *Amoeba dysenteriae*. In 1893, Kruse and Pasquale[4] retained the old name *Amoeba coli* Lösch for the noninfectious species. In the same year Quincke and Roos[5] set forth three species, and Celli and Fiocca[6] (1894-1896) distinguished five.

The genus *Endamoeba* was created by Leidy[7] in 1879, and the name applied to amebas not known to

* Read before the Manila Medical Society, April 2, 1917.

1. Lösch: Virchows Arch. f. path. Anat., 1875, **65**, 196.
2. Kartulis: Virchows Arch. f. path. Anat., 1886, **105**, 521.
3. Councilman and Lafleur: Johns Hopkins Hosp. Rep., 1891, **2**, 395.
4. Kruse and Pasquale: Deutsch. med. Wchnschr., 1893, **19**, 354, 378.
5. Quincke and Roos: Berl. klin. Wchnschr., 1893, **30**, 1089.
6. Celli and Fiocca: Centralbl. f. Bakteriol., Part I, 1895 **17**, 309.
7. Leidy: Proc. Acad. Nat. Sc., Philadelphia, 1879, **31**, 204.

be found in the human host. This generic term was applied by Casagrandi and Barbagallo[8] to those amebas found in the human intestine. In 1903, Schaudinn[9] designated the species pathogenic for man as *E. histolytica* and the nonpathogenic species as *E. coli.*

From this time on, many species of endamebas have been described, many with small excuse, and now the pendulum appears to be again swinging in the direction of reduction in the number of species. More than twenty species of endamebas have been described by different authors as occurring in the human host. At the present time, at any rate, it is universally conceded that *E. histolytica* is pathogenic and causes dysentery. The position of *E. coli* is not quite so certain. Regarded by many as harmless commensal in the human intestine, by others its lack of pathogenicity is not conceded. The latter class of workers find it difficult to reconcile its alleged nonpathogenicity with the fact that they see cases of dysentery in which only *E. coli* can be found. Furthermore, they draw attention to the well known fact that protozoa are subject to very marked alterations as the result of changes in environment, and assert that it is at least conceivable that an ameba which under certain conditions is harmless may become pathogenic when those conditions are altered in certain ways.

The bearing of this protozoal study on the treatment of dysentery is apparent. It may be mentioned that meanwhile it has been shown that many other causes of dysentery may be differentiated, each type requiring appropriate treatment. In 1898, Shiga[10] showed that one of the types of dysentery was due to a bacillus. Other types of dysentery bacilli have since been described, and probably more will be. The rôle of the tubercle bacillus, the spirochete, *Balantidium, Schistosoma, Opisthorchis, Clonorchis, Trichomonas, Lamblia,* and other parasites need only be mentioned to draw attention to the multiplicity of the causes of dysentery.

IMPORTANT QUESTIONS IN INTESTINAL AMEBIASIS

To confine our diagnosis, however, to intestinal amebiasis, aside from the question of pathogenicity and nonpathogenicity of species, other questions have assumed importance. Among these may be mentioned the occurrence of ameba carriers and the difficulty in distinguishing species.

Carriers.—As in diseases due to other causes, it has been found that endamebas may be present in stools of persons who have no dysenteric symptoms. Some of these persons have previously had attacks of dysentery, and others have never had acute attacks. This class of cases is subject to attacks or relapses, and to extension of the amebic process from the intestine to other parts of the body, especially to the liver. These persons also constitute a source of contamination for others.

Low,[11] in commenting on a case of amebic abscess of the liver occurring twenty years after the original attack of dysentery, says:

> Much attention has recently been bestowed, and rightly so, upon the danger of chronic amebic carriers spreading infection to others. This case is a very striking example of the danger of the carrier to himself, and brings forward once more the necessity of properly treating such cases . . . It is therefore of the utmost importance that all people who have had dysentery, even though it may have occurred years before, should have their stools thoroughly examined on several occasions to make certain that they are not amebic carriers; if they are found to be so, they should at once be treated in order to obviate the danger of a subsequent abscess in the liver.

Importance of Species Pathogenicity in Treatment.—One may readily find endamebas and may be able to differentiate the species. All physicians will treat *E. histolytica* cases. The question is still an open one as to whether all *E. coli* cases should be treated. On this point it seems only rational that an attempt should first be made to find other causes for the dysentery, and failing this, if the patient is dysenteric, treatment should be instituted regardless of the protozoologist's opinion of *E. coli.* More difficult is that class of cases in which *E. coli* is detected only in routine examinations of a person not suffering from dysentery. In that case it seems that the development of the earliest signs of intestinal disorder should call for treatment.

It must be remembered that constipation and intestinal endamebiasis may occur together.

Periodicity of Appearance of Endamebas.—Still further, it should be borne in mind that even in cases of severe dysentery the endamebas may be present in the dejecta only at intervals, and thus several examinations at varying intervals may be necessary before the organisms are found. Incidentally, ignorance of this fact has led to much unjust criticism of the laboratory worker. In all protozoan infections, great care must be exercised in claiming good effects from the administration of drugs, in view of the fact of their well known periodicity and spontaneous disappearance. Every worker who follows his cases carefully with microscopic examinations becomes more and more chary of claiming good effects from the result of drugs. Recently Dobell and Low[12] have clearly shown the necessity of this by the daily examination of the feces of a patient with intestinal lambliasis for a period of 100 consecutive days. They found that on thirty-eight days out of the hundred, *Lamblia* was discovered in the stools. On the other sixty-two days none could be found, and the negative days were in sequence for as long as ten days at a time. This is only one concrete example of the principle that careful investigators frequently see exemplified.

TREATMENT WITH IPECAC AND ITS DERIVATIVES

Treatment of intestinal amebiasis should be undertaken with a knowledge of the facts just set forth.

As stated above, ipecac was formerly advocated for dysentery, irrespective of the cause. The Brazilian root was apparently first taken to Europe by Piso in 1658, where it was successfully used by Helvetius in the treatment of Louis XIV, and was sold as a secret remedy to the French government. Two centuries later, Docker introduced the use of large doses (60 grains two or three times a day) of powdered ipecacuanha in the treatment of severe dysentery in Mauritius. His excellent results were confirmed by others. In 1886, Maclean and Chevers advocated the use of ipecac in acute hepatitis. Later the drug fell into more or less disrepute, but its use has been revived as a result of Manson's advocacy of its employment in dysentery and Rogers' in hepatitis.

8. Casagrandi and Barbagallo: Ann. d' ig. sper., 1897, **7**, 103.
9. Schaudinn: Arb. a. d. k. Gsndhtsamte, 1903, **29**, 547.
10. Shiga: Centralbl. f. Bakteriol., Part 1, 1898, **23**, 599; **24**, 817, 870, 913.
11. Low, George C.: Brit. Med. Jour., 1916, **2**, 868.
12. Dobell and Low: Lancet, London, 1916, **191**, 1053.

Meanwhile, many other substances have been used in the treatment of dysentery, among which may be mentioned quinin, bismuth, tannin, salines, opium, thymol, salts of silver, mercury and arsenic, including salvarsan. These drugs have been introduced by all routes, orally, by rectum, hypodermically, intramuscularly, intravenously, and through colostomy wounds. Each one of these drugs has accomplished good in some cases, but no one is good for all.

The chief interest in the treatment of amebiasis has centered around the use of ipecac and its derivatives, and it is with this phase of the subject that I wish to deal in this paper. This drug is commonly regarded as a specific for amebic dysentery. The drawbacks to its use in man have been, first, its emetic action and, second, the fact that dysentery does not always respond to the administration of the drug, in however large doses it may be given.

The drug contains five alkaloids, of which emetin and cephaelin are the chief. According to Ross,[13] emetin was first separated from ipecacuanha by Pelletier and Magendie in 1817, and was first recommended for dysentery by Bardsley of Manchester in 1829, while Tull and Walsh gave it by mouth in 1891.

In 1912, Vedder[14] reported in Hongkong before the Far Eastern Medical Association on the experimental action of ipecac on amebas, and there showed that emetin killed amebas in a dilution of 1 : 100,000. From this work he concluded that ipecac was a powerful amebacide, and he suggested that this action of the ipecac was due to emetin. This work of Vedder's was carried on in Manila.

Following up this experimental work, Sir Leonard Rogers[15] in India tried the hypodermic administration of emetin in the treatment of amebic disease and reported what he referred to as "strikingly good results." Referring to his success in his earlier cases, he says:

> Should further results fulfil the great hopes raised by the success above recorded, it will be difficult to exaggerate the boon which will be conferred on the numerous sufferers from the intractable and deadly amebic form of dysentery and its various hepatic complications.

A later article by Rogers[15] in the same year says that he believed his hopes to have been justified. The drug has been used in the form of the hydrochlorid administered hypodermically and intramuscularly.

Since that time, the literature has teemed with reports of successes and failures in the treatment of intestinal amebiasis by this drug. The British became especially enthusiastic in the support of the drug. Locally in Manila there are many who have failed to obtain desirable results following the administration of emetin, although the patients were frequently benefited symptomatically, and the amebas have disappeared for a time. Recurrences and relapses, however, have unfortunately been common. Within the last two years especially, the number of people decrying the use of emetin as the result of unfortunate recurrences after its use has been constantly increasing.

A new method of treatment which promises more favorable results has been looked forward to. Apparparently this has been partially realized. DuMez,[16] in 1915, published formulas of two drugs which he suggested might be of value in the treatment of amebiasis. These preparations were devised by DuMez especially for the purpose of treatment of this disease, hoping to obtain a drug which could be given by mouth, which would be efficacious, and which would not have the drawbacks ascribed to previous forms of treatment of the disease. These salts were emetin mercuric iodid and emetin bismuthous iodid.

As a result of his experiments on dogs, DuMez says that these two compounds may be given in doses representing 0.03 gm. of emetin hydrochlorid without causing vomiting and without any apparent nausea. The latter of these preparations alone has commanded attention.

It has the useful property of being practically insoluble in dilute acids but soluble with comparative ease in weak alkali. It might be expected, therefore, to pass the stomach unaltered, and then being dissolved in the alkaline juices of the duodenum, to undergo decomposition as it passed along the bowel with liberation of emetin and precipitation of bismuth sulphid. No serious attention was paid to this suggestion, as far as I can find out, until Dale,[17] in July, 1916, reported on its use. He tried it in ten cases, with good results in eight. In one case relapse occurred after two full courses of the drug, and in one case treatment could not be continued, owing to the vomiting and diarrhea which it caused. He is enthusiastic over the use of the drug. He states that

TABLE 1.—DUMEZ FORMULAS

EMETIN MERCURIC IODID	
Iodin	43.08 per cent.
Mercury	12.50 per cent.
Hydrogen (as hydrogen iodid)	0.23 per cent.
Emetin	44.19 per cent.
EMETIN BISMUTHOUS IODID	
Iodin	58.26 per cent.
Bismuth	12.36 per cent.
Hydrogen (as hydrogen iodid)	0.30 per cent.
Emetin	29.08 per cent.

trouble occurred in some cases from vomiting, but this was easily overcome in most instances. The vomiting is delayed and the comfort of the patient is affected more than the efficiency of the treatment. From 32 to 36 grains, equivalent to about 10 or 12 grains of emetin hydrochlorid, he regarded as a full course, and the daily dose was varied from 2 to 4 grains given in capsules. He says the frequency of vomiting is in no way comparable with that seen with the ipecac treatment, and there is no need as a rule to restrict diet, to keep the patient recumbent, or to adopt the precautionary measures which the ipecac treatment entails. Dale considers the expense of the drug a serious drawback to its widespread use.

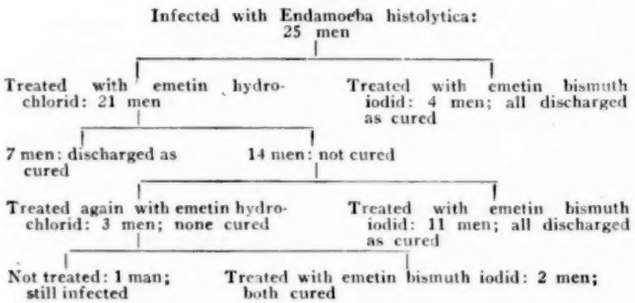
Later, Low and Dobell[18] published a report of three cases of *Endamoeba histolytica* infection treated with emetin bismuth iodid in which they obtained good results, but the period of time during which the cases were observed after treatment and before the report was made was too brief to justify far reaching conclusions. One was a case of acute amebic dysentery, one a case of a convalescent carrier of long standing, and one a contact carrier case. These three cases remained negative during the time that they were kept under observation. These authors also refer to the unpleasant effects on the patient, but say that the result obtained from their cases has convinced them that emetin bismuth iodid is far more efficacious than

13. Ross: Lancet, London, 1916, **190**, 1.
14. Vedder: Tr. Far East Med. Assn., Hongkong, 1912.
15. Rogers, Leonard: Brit. Med. Jour., 1912, **1**, 1424; **2**, 405, 828.
16. DuMez: Philippine Jour. Sc., Sec. B, 1915, **10**, 73.
17. Dale: Lancet, London, 1916, **191**, 183.
18. Low and Dobell: Lancet, London, 1916, **191**, 319.

emetin hydrochlorid given hypodermically in removing the cysts from the feces of chronic carriers. Conservatively they state that in their opinion "it should henceforward be generally employed in such cases, at all events until a more ideal treatment is forthcoming."

Still later, Dobell[19] gave an exhaustive report on his study of the use of the drug in intestinal amebiasis. He treated seventeen cases of *E. histolytica* infection with emetin bismuth iodid, and his results are shown in Tables 2 and 3.

TABLE 2.—TREATMENT OF TWENTY-FIVE PATIENTS WITH EMETIN HYDROCHLORID AND WITH EMETIN BISMUTH IODID


Infected with Endamoeba histolytica: 25 men
Treated with emetin hydrochlorid: 21 men
Treated with emetin bismuth iodid: 4 men; all discharged as cured
7 men: discharged as cured
14 men: not cured
Treated again with emetin hydrochlorid: 3 men; none cured
Treated with emetin bismuth iodid: 11 men; all discharged as cured
Not treated: 1 man; still infected
Treated with emetin bismuth iodid: 2 men; both cured

It must be mentioned in explanation of Table 3 that twenty-one days was adopted as an arbitrary limit, and cases which remained negative for this interval or longer after treatment were designated as "certain" cures. The effects of the administration of the double iodid on the protozoal contents of the stools are reported as truly remarkable. Within four days of the commencement of treatment, all traces of the *E. histolytica*, whether amebas or cysts, had completely disappeared from the feces, and in no single instance have they been subsequently found. Many of the men treated with the double iodid were infected with *E. coli, Lamblia* and *Chilomastix*, and in no case did the treatment remove any of these protozoa. *E. coli* disappears from the feces during treatment, but almost invariably reappears afterward.

As regards ameba carriers, Low says, "Fortunately we now possess in emetin bismuth iodid a drug which sterilizes chronic cyst carriers with a certainty not

TABLE 3.—COMPARATIVE RESULTS WITH EMETIN HYDROCHLORID AND WITH EMETIN BISMUTH IODID

	Treated with Emetin Hydrochlorid	Treated with Emetin Bismuth Iodod
Total number of treatments	24	17
Number of "certain" cures	5	9
Number of uncertain cures	2	8
Number of relapses	17	0

attained by any previous methods." In a footnote he adds: "It is essential, however, that the drug be given as the powder in a gelatin capsule, and not in any compressed form. Since writing this paper I have had a case in which 'stearettes' of it were passed in the feces absolutely unchanged, and the same may take place with keratin-coated tabloids."

Imrie and Roche[20] treated six cases of *E. histolytica* infection, in four of which the patients had had dysentery. Four had previously received emetin hydrochlorid, but still passed endamebas. Forty-eight hours after institution of treatment with emetin bismuthous iodid, endamebas disappeared, and in no case did they reappear while under observation, periods varying from fourteen to thirty-two days. The drug was administered in doses of 3 grains on twelve successive nights. Note that he says *"Dale* has introduced a compound of emetin and bismuth iodid for oral administration."

REPORTS ON EMETIN

The following are abstracts from articles which have appeared dealing with emetin from the standpoints of its mode of action, its toxicity, its pharmacology and its therapeutic action.

Jepps[21] reports on the use of emetin hydrochlorid administered hypodermically in twenty-one cases of amebic infections (chronic cases and carriers). He found that after the injection of at least 10 grains of emetin hydrochlorid, 57 per cent. were not permanently free from *E. histolytica*. In these cases, relapses after the end of treatment occurred at intervals from the fifth to the twentieth day.

Levy and Rowntree[22] investigated the toxicity of various commercial preparations of emetin hydrochlorid, and concluded that the administration of emetin hydrochlorid is not regarded as a harmless procedure. Individualization by close clinical observation is essential both for the success and safety of the treatment. The treatment should be given in courses, at intervals of several days or a week. The subcutaneous route is the one of choice. Individual dosage and the duration of each course must be determined by the exigencies of the case. One third grain three times a day for a week or ten days is usually a safe dosage in amebic infections. It is rarely necessary to give more than 1½ grains daily. Intravenous injections should be employed only in extreme cases. If this mode of administration seems imperative, small doses, well diluted (½ grain in 100 c.c. salt solution) should be slowly given, and blood pressure should be carefully observed during the injection.

Lyons,[23] in 1915, investigated the mode of action and use of emetin in endamebiasis, and concluded that ipecac and emetin when taken by needle or by mouth act through absorption into the blood stream and exert their specific effect only on those endamebas within reach of the circulation, that is, in the tissues. Relapses are due to the survival of some of the endamebas probably through encystment. In the carrier state the endamebas are probably simply harbored in the lumen of the intestine in the same manner as the coli, thereby causing no symptoms. The intestinal mucosa is in some way protected against the penetration of the organism. In order to prevent relapses, an intermittent form of treatment should be instituted in every case, even though cysts are not found.

Ross[13] says that he thinks the hypodermic use of emetin brings the drug more directly into contact with the amebas at the bottom of the ulcers, while the ipecacuanha by mouth does more to attack amebas on the surface of the mucous membrane and in the lumen of the intestine, so that he is inclined to favor the use of both at the proper stages in the treatment. He also favors the use of bismuth, the treatment elaborated by Deeks in Panama and consisting of a heaped teaspoonful of the subnitrate three or four times a day. The utility of this is supposed to depend not only on the

19. Dobell: Brit. Med. Jour., 1916, **2**, 612.
20. Imrie and Roche: Lancet, London, 1917, **192**, 17.
21. Jepps: Brit. Med. Jour., 1916, **2**, 616.
22. Levy, R. L., and Rowntree, L. G.: The Toxicity of Various Commercial Preparations of Emetin Hydrochlorid, Arch. Int. Med., March, 1916, p. 420.
23. Lyons: Am. Jour. Med. Sc., 1915, **150**, 97.

astringent value of bismuth but also on a chemical change and lastly on the mechanical action of the powder, which is likely to injure amebas by attrition. Ross believes in the use of a comparatively dry but varied diet in dysenteries.

Pellini and Wallace,[24] in 1916, investigated the pharmacology of emetin, and emphasize that emetin represses and may eventually paralyze the heart. It is a powerful gastro-intestinal irritant whether given by mouth or subcutaneous injection. It causes a definite derangement of metabolism, characterized by an increase in nitrogen loss and an acidosis. While in normal individuals given moderate doses, these actions may not be of importance, in pathologic states of circulation, intestinal tract or metabolism, they may be a very definite source of danger.

CONCLUSION

I wish to draw attention to the fact that Vedder in Manila suggested the possible curative action of emetin in amebiasis, while it remained for Rogers in India to demonstrate its practical use and to receive the credit therefor. DuMez in Manila suggested the advantageous use of his two compounds in the same disease, and thus far the British workers get the credit for having tried one of them.

I have purposely avoided prescribing any form of treatment for dysentery because of my position as a pathologist; but my aim has been to summarize and draw attention to the work of others concerning the use of ipecac and its derivatives.

THE RÔLE OF ALCOHOL IN THE WELFARE OF THE HUMAN RACE

FROM THE STANDPOINT OF PHARMACOLOGY AND THERAPEUTICS *

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There is no other substance the mere discussion of which so stirs the passion and prejudices of mankind as alcohol. There is no other pharmacologic agent that, to the same extent, has had its praises sung in verse and prose, and that has been cursed as violently and vehemently. A titanic political struggle is being waged for and against it. John Barleycorn is on trial for life. We of the medical profession must be just to the defendant, realizing that all that is has a reason for its existence. As our stand in this conflict must be no uncertain one, let us ask ourselves, What is the rôle of alcohol in the welfare of the human race? What would be the loss to mankind should those prevail who would abolish its use?

ALCOHOL AS A STIMULANT AND A DEPRESSANT

To judge from the opposing views held regarding it, alcohol must have great virtues as well as vast power for evil. Indeed, alcohol is a drug of curious antitheses in its actions on the body. It is, for instance, a stimulant and a depressant at the same time. Who would deny that alcohol is a stimulant, when he notes the flushed face, the quickened pulse and respiration, and the increased vivacity of motion, action and speech, up to the appearance of brilliancy and inspiration, produced by a "moderate" dose of liquor? Who would question that he has taken a stimulant when he experiences these effects on himself, together with the feeling of warmth and well-being, strength and exhilaration that permeates his whole system when he takes such dose? And yet a critical study of the causes for these effects shows that they are not the result of a true stimulation of the nerve centers. It can be demonstrated that, in its effect on the central nervous system, alcohol is a depressant from the very beginning. It paralyzes the central nervous system according to the law of dissolution, which postulates that the last acquired functions are first to go. It shaves off the nervous system layer by layer, and causes stimulation by reason of the fact that removal of the higher functions produces an apparent stimulation of the lower ones. It upsets the normal balance of the brain, impairing and abolishing first the highest and last acquired functions, namely, those of self-restraint, attention, observation, reflection and judgment.

Alcohol, by removing the mental accretions of our later development, makes us feel young again. And who would not like to drink of the fountain of youth? A cup of liquor may convert the staid and steady banker into a reckless and boisterous boy, the calculating and critical professor into an irresponsible and loquacious youth. By abolishing the last acquired impressions first, liquor makes us forget our troubles. It enables us to drown our sorrows; but, as has well been said, alcohol is such a good preservative that it keeps our sorrow for the morrow. That even a small dose of liquor slows the speed and lessens the accuracy of thought has been proved over and over again by exact experimentation; and yet the person experimented on has the curious illusion that he has performed the act more quickly and better, for the finer grades of judgment have become lost. It is this overestimation of oneself as well as the loss of ability to calculate on the consequences that makes liquor an accomplice in crime as well as an ally in heroism. For, after all, criminal as well as heroic deeds have this in common, that they are undertaken with a disregard of the consequences to oneself. The difference is that the criminal harms his fellow men, the hero helps them.

In the same way, deeds of bestial cruelty or of expansive benevolence are equally inspired by alcohol. There is "truth in wine" in that it exposes the character that would crop out when, for any reason, one's function of self-restraint is gone; but one must not rely on statements made by a person under the influence of alcohol, as though they were the truth, the whole truth, and nothing but the truth. Liquor may make the orator more eloquent. It is easy to be brilliant, when you do not care much what you say. Alcohol makes one feel strong, and yet it strengthens no one; it merely benumbs the sense of weariness.

When alcohol is used to the extent of producing intoxication, its mental anesthetic qualities are plainly evident. When one contemplates the degradation into which liquor drags us, one may well ask, Why do human beings put this stuff into their mouths that robs them of their brains? Brunton aptly answers that they do this for the same reason that human beings do anything, namely, to derive pleasure or to escape pain.

24. Pellini and Wallace: Am. Jour. Med. Sc., 1916, **152**, 325.

* Delivered before the Chicago Medical Society, April 4, 1917.

Alcohol lends itself to either purpose. Is it a wonder that it is popular?

As an analgesic, alcohol deserves to be ranked alongside of opiates and cocain. It is particularly potent for the relief of gastric, intestinal and uterine colic. A narcotic dose of it will relieve any pain. On the other hand, no one will deny that it is a habit-producing drug, just like opium and cocain. This being the case, why should it not be included among the drugs covered by the Harrison law? In the number of victims, alcohol vastly outranks all other narcotics. The Harrison act, as it now stands, catches the petty thief and permits the robber chief uncontrolled devastation. Were the people adequately protected against its seductive qualities, alcohol might be a safer drug to use medicinally. While alcohol relieves pains, it cures none, excepting when used by injection into the nerve in trifacial neuralgia, for which purpose it now has a well established place. On the other hand, it must be ranked high as a cause of pain, for it is the single most common etiologic factor in neuritis.

The chief trouble with liquor is that it depresses and eventually paralyzes inhibition. A man may start out to take one drink, and wind up dead drunk. What is still worse, on long continued use of alcohol, the faculties, at first temporarily abolished, become lost forever, so that the chronic alcoholic becomes progressively less able to control himself. It is this loss of self-control that makes inebriety so hard to cure. For of what avail are promises, vows and pledges, when no power is left to execute them? The man who takes pride in the notion that he can drink or leave drink alone, just as he choses, should test himself by suddenly cutting out drink. He will probably be shocked at the hold the craving for liquor has on him. Fortunate is he who has will power enough left to resist the craving. Such a one merely had the alcohol habit, and he had better give it up while there is yet a chance, for he who does not will become progressively less and less able to resist, and may finally become an incurable drunkard, as a degenerative condition of the brain will have developed, recovery from which may be impossible. This is the way in which liquor strews the paths of life with wrecks of what were once men. It is possible for some to drink moderately during a long lifetime; but no one can tell whether or not he is one of these. As Forel says: "Moderate drinking is the nursery of inebriety."

How illusive the effects of alcohol are is well shown by its action on body temperature. It makes one feel warm, while at the same time it lowers body temperature, for it dilates the blood vessels of the skin, and we are accustomed to judge our body temperatures by the amount of blood in the skin. It at the same time benumbs the heat-regulating center. This is the reason why the highest as well as the lowest recorded temperatures in human beings have occurred under the influence of alcohol. Freezing to death most commonly takes place in intoxicated persons. Sunstroke is generally sustained from the combined effect of liquor, hard labor and strong sunshine. It is evident that alcohol should not be taken before one goes out into the cold. After exposure to cold, when one is in a warm room, it may help one to warm up more quickly. That is what its use in the breaking up of a "cold" amounts to. Of course, it is not a cure for "colds," as is popularly supposed by the laity.

Alcohol is not a true stimulant to the circulation. Its chief effect here is to change the distribution of the blood by producing dilatation of the blood vessels of the skin. As there is no essential change in blood pressure or acceleration of the pulse — which occurs only when alcohol produces mental excitement — there must be either constriction of deep blood vessels or stimulation of the heart. As the latter does not occur under ordinary circumstances, we must look to deep vasoconstriction and superficial vasodilatation as the chief change produced. This change occurs, at first, as the result of reflex stimulation of the vasomotor center from irritation of the stomach, and is later continued by a depression of the vasoconstrictor center, the more easily affected blood vessels of the skin showing the change first. The best use of alcohol for the improvement of the circulation is in shock. Here its narcotic action, which lessens the appreciation of the injury sustained, produces, no doubt, the chief benefit. Nevertheless, the reflex stimulation from the stomach is not to be despised. Hence for this purpose alcoholic liquor should be given in considerable concentration; for instance, brandy and water equal parts, preferably administered hot.

Alcohol is more truly a stimulant to gastric digestion than to any other function of the body. There can be no doubt that, given sufficiently diluted, it is a stomachic. In its power of stimulating the appetite, gastric secretion, peristalsis and absorption, it is probably unexcelled by any other chemical stimulant in our possession. The normal stomach, however, needs no such stimulant, and the diseased stomach is not cured by it. Indeed, alcohol is the single most important cause of gastritis in the adult. No doubt, were it not so efficient as a stomachic, it would not lead so often to the production of gastritis. As one can digest a poorly cooked meal better with the aid of alcohol than without it, poor cooking in the home is probably one of the causes that drive men to drink.

ALCOHOL AS A FOOD

That alcohol is a food cannot be doubted. Over 90 per cent. of it oxidizes in the tissues, each gram yielding over seven calories. Thus it has a higher caloric value than protein or carbohydrate. That it can replace fat and carbohydrate to a certain extent has been definitely proved. This effect might be useful during starvation. When, however, food is taken in abundance, alcohol is not only superfluous as a nutriment, but positively harmful. It is by burdening the system with excess of food that beer produces the bloated flabby-fat caricature of humanity; it is in this way probably that wine favors the development of gout. But the worst of it is that alcohol is a poison at the same time. To take enough calories in the form of liquor to represent a square meal, one would have to drink enough to make one dead drunk. Habitual consumption of it, no doubt, frequently contributes to the evolution of arteriosclerosis and of degeneration of the parenchyma and overgrowth of the connective tissue of the various important organs of the body, most especially of the liver and the kidney, though the extent of its cooperation in the development of hepatic cirrhosis, chronic interstitial nephritis and myocarditis is not yet fully established. It is certain that alcohol cannot be considered a useful food for healthy persons. With the drunkard, the food value of alcohol becomes greater in proportion to the degree to which he develops tolerance to its intoxicating qualities.

Owing to the deranged condition of his stomach, which makes it impossible for him to digest in comfort enough of other food, he becomes more and more dependent on the liquor, which not only helps him to digest his food, but also serves as a food itself.

In fever, alcohol is oxidized to a much greater extent than by the same person at normal temperature. Hence its food value might be of consideration in fever patients, especially in cases in which digestion is very much impaired. The mode of administration of alcohol to the fever patient depends on the other effects that might be desired at the same time. If we wish to obtain the stomachic effect, it is best given in the form of milk punch, a teaspoonful to a tablespoonful of brandy in each cup of milk. On the other hand, should we desire its stimulant effect on the circulation, a tablespoonful or two of brandy would be given diluted with one or two parts of water, the dose being repeated every hour or two. The effect should be watched, and the dosage continued only when it is decidedly favorable. When the stomach is nonretentive or the patient cannot swallow, the alcohol may be administered in starch water by rectum. Should hypnotic action be desired in a fever patient, beer or bottled stout might be given. Whether or not liquor thus used would lessen resistence to infection, cannot be answered in the light of our present knowledge. It is well known, of course, that drunkards give a much poorer resistance to infection than the abstainer. This, might, however, be due to the tissue damage produced by the previous use of the liquor. The rule that a narcotic drug habitué should not be deprived of the drug his system demands, when serious sickness overtakes him, should no doubt be applied here. When a drunkard has pneumonia, it is a poor time to attempt to break him of the liquor habit. It is just in such cases that liquor may be life saving.

I am very doubtful regarding the desirability of using liquor as a tonic in convalescence from acute disease. The patient is altogether too apt to think that what was good for him when he was weak ought to be good for him when he is strong. Likewise, because of danger of formation of the liquor habit, alcoholic beverages should not be prescribed in chronic ailments; as, for instance, beer in insomnia. After all, alcohol is merely a symptom remedy. It does not cure anything, excepting perhaps neuralgia of the fifth cranial nerve, when 1 or 2 c.c. of a 1 per cent. solution of cocain in 90 per cent. alcohol are injected into the various branches of this nerve to produce a more or less permanent degeneration of the nerve.

EXTERNAL USE

Perhaps the best use of alcohol is the external use. Thus it is useful as a skin disinfectant, when used in full strength. For chronic otorrhea, 30 per cent. alcohol saturated with boric acid may be used to fill the meatus, which is subsequently mopped dry. The strength of the alcohol may be gradually increased up to 95 per cent. Mucous membranes do not tolerate alcohol in disinfectant strength. In the mouth, alcohol can be borne in strengths up to 30 per cent., which may be useful as astringent if not as disinfectant.

As an antiseptic, compresses moistened with alcohol as strong as can be borne are useful in the treatment of skin infection, as in furunculosis. The initial concentration may be 25 per cent., the strength being gradually increased up to 60 per cent. or more, as tolerance is developed. The compresses are covered with oiled silk to prevent evaporation, and changed two or three times daily. Their action may probably be enhanced by the addition of boric acid to saturation, by the application of a hot water bag outside the dressing, and by using hot boric acid dressings for one hour each time the compress is changed.

As a rubefacient, similar compresses moistened with 95 per cent. alcohol and covered with oiled silk are useful in the treatment of felons, boils and similar subcutaneous inflammations.

While alcohol produces rubefaction, when applied under occlusive dressing, it is a cooling lotion producing vasoconstriction when applied in such a way as to favor evaporation. Thus gauze kept moist with 50 per cent. alcohol and applied without covering forms a grateful cooling application in erysipelas. Dilute alcohol is also useful for sponging fever patients, though a somewhat more liberal use of cold water would be just as efficient.

CONCLUSION

It may be stated that alcohol has certain definite uses in the treatment of disease, though it is by no means indispensable. In the hands of the people, it is a dangerous habit-producing narcotic. The medical profession, well knowing its evil effects, cannot but ally itself with its enemies. Should humanity be deprived of liquor, it will have lost a consoler, but will have far less need for consolation. Alcohol may afford man a sense of well-being, but it certainly does not contribute to the welfare of the human race.

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CRYSTALLINE DEPOSITS IN THE EYE*

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A study of life processes, even though we are not able to arrive at final conclusions, is always a subject of great interest. For the ophthalmologist a condition in which side by side with the normal functioning of an organ or a tissue may be seen a return to the elemental substances of which it is composed is peculiarly important, because in the eye alone, of all of the tissues of the body, he may follow Nature at work in her laboratory. He may see the blood vessels swelling in congested areas. He may observe the serous transudation, becoming in time a plastic exudate. If he cannot actually discover the blood vessel in the act of breaking, he can at least determine its location and disposition when a hemorrhage occurs. He is able to note the process of absorption or of disintegration of the transuded fluid, following it finally to the point at which, through retrogressive changes, it is reduced to its ultimate constituents, and glistens in the retina or scintillates in the vitreous as scattered masses of bright light reflecting crystals of cholesterin or atrophic patches of pigmentary degeneration.

It is of interest to the ophthalmologist, moreover, as he recognizes these end-results, degenerative changes which he may trace back to their origins, for the reason that having observed their termination he may the more readily perceive the earliest tendencies which, if continued, may lead to like disastrous results. It is a condition, furthermore, that appeals to him as a

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pathologist, as the same forces that impede the progress of normal physiologic processes in the eye during life may be producing similar changes in remote parts of the body where they cannot be seen, and where their existence may be only inferred from the presence of symptoms which are more or less misleading.

I have ventured, therefore, to choose a somewhat unusual subject, for though I may be unable to add any very new facts in relation to it, it may be worth while for us to consider in what tissues of the eye a reversion to the deposit of crystalline substances may occur, how these processes are brought about, and what they connote.

CRYSTALLINE CASTS IN THE CORNEA

It has been exceedingly rare in my experience to find in an eye, otherwise functioning normally, an extensive deposit of lime salts in the cornea. That they should occur is in itself an evidence that that particular part of the cornea has lost its vitality. One special case, coming under my observation some years ago, impressed me strongly:

The patient, a man then beyond middle life, and seemingly in perfectly normal health, had been under my care some twenty years before. At that time he suffered from an extensive corneal burn, involving both eyes and leaving deep opacities. Only the upper parts remained clear, and he was able to see through these by reason of iridectomies that I had made at the time, and had been thus enabled to carry on his work as a carpenter. After so many years he came again—with the ocular conjunctiva of the better eye on which he had chiefly depended highly injected and intensely painful. The sensation was as though it were filled with sand. The condition had been growing worse for weeks until it finally grew unbearable. The surface of the cornea presented the usual white nebulous appearance of a thick leukoma, with the vessels of the conjunctiva everywhere enlarged and extending to the limbus. On touching the surface with a probe I found that it gave a hard stony or glassy impression, and by running the point of the probe over the surface I found that a solid limy deposit had settled on the surface of the cornea, and while the surface seemed smooth, the epithelial covering had been wholly rubbed away by the lid and it was actually covered with fine elevations like pin points, in reality giving the effect of an extensive foreign body. With some little effort I succeeded in prying the mass from the eyeball, and it came away in the form of a perfect cast, the inner surface especially being honeycombed where it had adapted itself to the roughened surface of the substantia propria of the cornea. The outer superficies were also roughened, giving the appearance of having at one time been smooth, but the more prominent parts seemed to have been worn off, either from the attrition of the lid or from the chemical action of the secretions of the eye. On the edges of the cornea several smaller flakes were scaled off in the same way. In some places it was necessary to take a sharp knife to scrape off the mineral deposits, so intimately had they fixed themselves in the interstices of the corneal fibers. The removal of the deposit ended the discomfort from which the patient suffered, and he has never had any recurrence so far as I know.

Similar deposits not infrequently develop in scar tissue, resulting from old corneal ulcers in which the epithelium has been destroyed. They are always slow in forming, and the pathology seems to be the same in both instances.

Occasionally lime deposits may be found in the substantia propria of the cornea in which there have been no previous inflammatory changes. These seem to be of much the same character as the structural degeneration which occurs in the elastic tissue of the vessels in arteriosclerosis.

CALCAREOUS DEGENERATION IN THE SUBSTANTIA PROPRIA CORNEAE

A spare, feeble old man, whose arteries had for many years been hard, had had for a long time nebulae scattered through the cornea. More recently these had grown dense. In the right eye a mass occupied the pupillary area and was perhaps 2 mm. in diameter, gradually thinning toward the edges. The arcus semilis had taken on such a degree of density that it could with difficulty be distinguished from the white scleral tissue. A relatively clear area formed a circular zone of sufficient breadth to show almost the entire iris and a small and not very mobile pupil. In course of time the lens became opaque, and as there existed a good projection field and blindness was already present, with no hope of improvement, I yielded to his importunities and extracted the lens. As the knife engaged the cornea the sensation conveyed to the hand was that of cutting a tissue filled with ashes, and even the sound of scraping could be heard as the blade encountered the hard limy deposit with which the tissue was strewn. This was undoubtedly a very rare condition and was allied to the "nodular opacity" in which Treacher Collins says that calcareous deposits are sometimes found.

The operation proceeded without any other unusual incident. Healing was followed by no inflammatory reaction, but so advanced were the degenerative changes that the small amount of improved vision obtained by the operation gradually disappeared.[1]

The concretions, which in the conjunctiva or on the tarsus have been considered of sufficient importance to have been carefully studied by Fuchs, are not of infrequent occurrence in the eyes of elderly people or when the eyes have been irritated or inflamed. Sometimes they are wholly encysted, occasionally they protrude through the epithelium, appearing as white or yellow bodies, and until they are removed cause much discomfort.

The concretions are the result of mucoid exudate in retention cysts. They are of the same character as the concretions found in degenerate chalazia.

Calcareous and osseous degeneration of the choroid have been so carefully studied, and so much has been written concerning these conditions, that I shall only briefly refer to them. The deposits, as were shown many years ago, are not in the choroid proper, but in the fibrous exudate between the choroid and the retina. Ossification is the last of the degenerative changes that occur in plastic choroiditis.

In eyes which have been subject to any long continued inflammatory process, calcareous concretions may be found in almost any of the tissues.

Bietti[2] found limy deposits in the optic nerve head. There was glaucomatous cupping in which new tissue was formed as a result of retinal inflammation, and in this the lime salts were deposited.

In nine cases reported by Rumschewitsch,[3] ossification and calcification were found in different structures in the eye. In six there was a deposit of bone in the choroid which was not confined to the choriocapillaris. In two there was ossification of cyclitic membranes. In one there was a bony mass inside the vascular layer of the choroid with calcareous deposit in the retina.

Albertotti reports two cases of bony mass within the choroid.

Roy[4] records a calcifying fibroma of the orbit.

Arboleda, a South American ophthalmologist, describes a condition characterized by the presence of

1. A condition closely allied to this rare form of corneal degeneration is described by Collins and Mayou as "transverse calcareous film of the cornea."
2. Bietti: Ztschr. f. Augenh.; January, 1908.
3. Rumschewitsch: Arch. f. Ophth., 1908.
4. Roy: Montreal Med. Jour., 1908.

minute calcareous bodies in the palpebral conjunctiva, frequently seen in Bogota, usually at the lid margins and at the culdesac.

All of these conditions must be distinguished from conjunctivitis petrificans, to which attention has within the last few years been directed. Sidler-Huguenin records a remarkable case of the latter condition occurring in a hysterical girl, aged 16. It was induced by her putting lime in the conjunctiva sac and grinding it into the lids, by scarifying the conjunctiva and by contusing the lids. Chemically and anatomicopathologically it differed scarcely at all from previously described cases of this remarkable form of conjunctival disease, and the author thinks that by a careful study of the patient, this disease as an entity may disappear from our literature.

The disease is so unusual that it may bear a brief description. The best description of it available is that found in the American Encyclopedia of Ophthalmology. It was first described by Leber in 1893, and is characterized by the presence in the conjunctiva of inflammatory swelling in which opaque white spots may be seen. The spots consist of lime in organic crystallizable combination. They increase in size as the disease spreads spasmodically, and finally coalesce, forming a hard, stony mass. New foci will appear while others are healing, and the process thus lasts for months or years. These smaller foci are said to vanish by absorption, while the larger ones coalesce into shriveled, thickened spots on the conjunctiva; but those who have seen cases of this kind do not explain how it is possible for a limy concretion to be absorbed. Blindness is through corneal involvement, and the treatment consists of removing such a focus when it is possible to do so.

Del Monte, the Italian ophthalmologist, gives a detailed history of a case of this kind which came under his observation, in which the *Bacillus xerosis* was found to be present. The *Bacillus xerosis,* we know, is commonly found both in health and in disease. Indeed, it was the only micro-organism present in a large proportion of the cases of infantile ophthalmias reported to our local board of health during the past winter. There seemed to be a xerosis epidemic.

In Del Monte's case, in an eye previously sound, hyperemia of the tarsal conjunctiva and the fornices suddenly came on and remained there for about four days, accompanied by very copious secretion, and then on the middle portion of the tarsal conjunctiva below and in the inner sectors of the conjunctivae of the globe, sometimes relatively large and single, at other times minute and multiple, these being accompanied by sharp pain and profuse lacrimation. The epithelium over these hemorrhages was shed as grayish white detritus, the aspect of the parts resembling that of a burn of the membrane, the margins clean cut, but the floor irregular, covered by whitish or yellowish foci, not easily removed even with scraping, the whole aspect of the exudate tough, membraneless, smooth, not elevated, and surrounded by considerable hyperemia, as well as the resulting scars, strongly suggesting the appearance of a diphtheritic ulcer. Other little foci appeared also without being preceded by hemorrhages, similar in appearance, always small in size, and whitish. The healing of these superficial ulcerations, and then the return of pain, hemorrhages and the formation of fresh lesions went on for a time as narrated. Apart from an injection of serum no treatment seemed to produce any effect whatever.

The pathologic examination was exceedingly interesting. The process, it seemed, divided itself into two periods, as shown from the microscopic examination of portions of the tissue excised at an early stage in the morbid process. At a very early stage there was loss of epithelium, although the surface was smooth. In the substance the lymph spaces were very large, so much so that at parts the tissue was almost reduced to a large mesh network. In this tissue the vessels were dilated, with edema of the endothelium in all the coats. In the parts later removed there were signs of copious serous and cellular exudation which had parts in the interior of the fibrous tissue.

Del Monte's impressions from carefully made examinations are that the first step in the morbid process was an edema and cellular inflammation. Following this, by the absorption of the fluid, and in consequence of the pressure undergone which would, of course, be accentuated by the existence of highly resistant fibers, calcification might easily take place with partial necrosis of the tissues. Micro-organisms were obtained from the surface of the ulcers and from the broken down tissue, as well as from the surrounding zone of infiltration. Occasionally under the epithelium, at the edge of the ulcers, would be found large cells such as are seen in xerosis. Two forms of organisms were frequently present, one bacillary and the other coccal, but not, the author concludes, staphylococcal. He was unable to identify it with any measure of certainty. The xerosis bacillus was found deeply penetrating the tissues, sometimes even in leukocytes and in great numbers in the epithelial cells. Successful treatment followed the use of Behring's antitoxin serum.

Few cases of this rare disease have been reported. Among the most important is that of Laeber before the Heidelberg Congress in 1895. Cases have also been observed by Reif and Mayweg and by Posey in this country.

Perhaps the most typical form of degeneration which may go through the various phases to the deposit of the lime salts is found in the lens as it develops into cataract.

When the lens begins to sclerose the fibers are drawn more closely together. With this is a contraction of the intrafibrillar cement, a narrowing of the fibers, and a firmer interlocking of their crenated edges. Between these shrunken fibers the interfibrillar fluid collects in drops. Gradually the opacity extends until the lens is ripe. Following the period of maturity comes that of hypermaturity, in which the cortex liquefies, forming an opaque milky fluid. The surface of the capsule loses its radial markings and presents a homogeneous surface on which little white specks may sometimes be seen. These are due, according to Mayou and Collins, to calcareous deposits in secondary cataracts which form as a result of the diminished intracapsular tension. Ultimately degenerative changes progress in morgagnian cataract, the fibers undergo fatty degeneration, minute droplets form in them, giving rise to a granular appearance, these run together, and the fibers break down. In this way spaces are formed in the cortex of the lens containing a mixture of albuminous globules and drops of fat. As the cataract progresses, these spaces open up into one another, and more and more fibers undergo degeneration. Ultimately the whole cortex may become liquefied, and sometimes contains cholesterin crystals.

I have given this detailed description of the retrogressive changes which take place in the reduction of the lens from a vital organ into its primitive salts because it is exactly interpreted by our knowledge of cytology. In all life processes the structure proceeds from the simple to the more complex, from the elemental to the composite. When the vital bone ceases to be dominant the complex structures revert, going back again, step by step, through the same processes to their simple constituents.

The more important advances that have been made during the past decade have been along the line of

physiologic chemistry. With the upbuilding in its simplest form of the substances found in air and water into the protoplasm which becomes organized into living structures, capable of performing the functions for which it is designed, there must be corresponding retrogressive changes. In order that that perfect equipoise may be secured, the balance of the increment and the excrement of the cell must be maintained. This balance being once destroyed, the initiation of structural degeneration will have begun.

In considering this reversion in the living body to primitive forms we are looking on the last phase of organic life. It is the end-product of a long series of changes, of which the beginning was in the cell. There would be little of value, or even of interest, in recounting such conditions, even as curiosities in pathology, if they carried with them no intimation of the reason why the vital energy had departed, and why with its departure the structure, which it had held together, fell to pieces. This the study of dead tissues, no matter how carefully performed, fails to tell us.

The first altered pathologic condition which we see is macroscopic; the next is microscopic; the third — that which is most helpful — deals with physiologic chemistry.

BIOLOGY OF THE CELL

In every case of disease there must have been a wide range of gradations, from the initial disturbance of nutrition through the breaking down of structures, up to the final dissolution of the material into the elements of which it is composed. The end-results are visible to the naked eye. They are more fully detailed under the microscope, but they can be comprehended only through our study of physiologic chemistry. Permit me, therefore, in a word to recall a few of the important facts which have a bearing on the biology of the cell.

Every living cell, no matter what may be its function or ultimate destination, is a mass of protoplasm enclosed within a cell wall. It has in its substance proteins, lipoids and an enzyme. It is in fact a colloid in which crystalloid substances are readily soluble. Under the influence of chemical action, of heat, of electricity, of light or of radioactive forces, the cell is split up into the component carbohydrates, the molecules forming new groupings, through a long series, until the simpler forms are finally reached.

As Pauli has shown in his various lectures on "Physical Chemistry in Medicine," physiologic experience compels us to believe that chemical reactions of the most different kinds are simultaneously possible in the homogeneous ground substance of the cell; and in even the smallest particles of protoplasm, antagonistic chemical reactions, such as oxidation and reduction, hydration and loss of water, condensation, synthesis and their opposites, assimilation and dissimilation, are likely to occur through and beside each other.

Just as the chemist allows different chemical reactions to take place in different vessels, the cell is believed to utilize the different chambers of the honeycomb structure, and with the help of the colloidal ferments, the number and knowledge of which is daily growing, to allow the necessary reactions to go on independently of each other.

In order that we may visualize these cellular activities, which are constantly taking place, we must think in terms of cell structure continuously related. With such colloids as the cornea, the membrane of Descemet, the lens capsule, the lens cortex, the vitreous, the hyaline membrane, the nerve cells of the retina and the membrane of Bruch in contact with such colloids as the lymph and the blood plasma, with the aqueous filled with crystalloids in solution, with each cell penetrable by the toxins given off from bacteria or from chemical changes, we may begin to realize the enormous possibilities that are opened up to us, not only concerning the physiology and the pathology of the eye, but as to the therapy as well. The same laws, it will be remembered, govern the cell contents and its membrane as to osmosis and surface pressure as apply to other animal membranes, and while it is not yet proved, it is not at all improbable that the edema within the eye, whether it takes the form of an acute or a chronic, a simple or a fulminating glaucoma, may ultimately be found to be due to the swelling within the vitreous cells of soluble toxins. Equally the atrophic changes in the lens fibers, like the fibrous and subsequently fatty changes in xanthelasma, or in the arcus senilis, are evidences of the presence of soluble toxins which have disturbed the normal functioning of local cells.

Therapeutically it is clear that every drug substance introduced into the animal body must be ionized before its constituent electrons can activate those within the living cell. This is, of course, aside from the subject under consideration. It has been most interestingly treated in a little volume by Leduc entitled "Electric Ions and Their Use in Medicine."

The acute or chronic inflammation of a tissue is only an intermediate stage, and is produced by a local irritation which may be due to a toxin introduced by some pathogenic bacterium.

Practically all forms of uveitis that are not traumatic, and many that are traumatic, are due to this cause. We no longer speak of rheumatic iritis. We look for the source of infection of both the rheumatism and the iritic inflammation. It may be found in an apical tooth abscess, it may arise from an infected sinus, or it may be as remote as the appendix. From such a locally infected point the toxin given off by the bacterium, the staphylolysin or the streptocolysin, is readily absorbed by the blood plasma and carried to the uveal tissues. Many illustrations come readily to mind, but one will suffice:

A lad of 18 had for five years been suffering from choroiditis. Large patches of exudation had been followed by atrophy, involving the macula of one eye, and coming dangerously near the visual center of the other. He had been under able, conscientious and expert care. When he was seen in midsummer in consultation it was evident that there must be somewhere a nidus, a focus of infection. He was seemingly perfectly well, free from both tuberculosis and syphilis. An investigation of his nose at first revealed nothing but a swollen middle turbinal. His rhinologist was urged to remove it for exploratory purposes. When this was done, immediately a mass of thick yellow pus appeared. The ethmoid was fully explored, opened and cleaned, and the active disease in the choroid became quiet. Two months later a new attack supervened, when a deeper hidden infected cavity was disclosed, and a roentgenogram revealed a blind abscess at the root of a molar tooth. Both were relieved when some weeks later a third attack developed. On this occasion the small, hard, sunken tonsils were removed, and both were found diseased. Since then there has been no recurrence of the active uveal disease; one cannot but feel, however, that had the source of the trouble been recognized much earlier the young man might have escaped the handicap of defective sight for the remainder of his life.

One hesitates to speculate, but the facts so rapidly accumulating all seem to point to the absorption of

different toxins as a possible, if not a probable, cause of both glaucoma and cataract.

In a recent case of glaucoma, in which excellent iridectomies had been made by an eminent Scotch surgeon, and in which only a remnant of sight remained, there were evidences of extensive choroiditis. The poor woman, finally in perfect health, had lost every tooth. She said that during the years in which she was steadily going blind she suffered constantly from toothache. It is well known that no sanitary precaution has been more neglected among the poorer classes, and even among the fairly well-to-do, than the care of the teeth.

One can readily understand from the cesspools that one finds in the mouths of those from whom more would be expected that these must be never ending sources of infection. I think that we will find, too, if we go outside of our special lines of work, that there is not a patient who comes to us, with commencing striae in the lens, who will not be found to have impaired metabolic functions. There will be a greater or lesser degree of intestinal indigestion, with the resultant absorption of toxic products. And if we would avoid the final degeneration changes, which so often are presented to us, we must seek for all possible sources of infection before the damage has been done.

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ABSTRACT OF DISCUSSION

DR. BURTON CHANCE, Philadelphia: It is difficult to get at the chemical reactions going on in the ocular tissues, and the results of the observations of careful observers have often been disappointing. Certain general states of depravity justify us in assuming that deleterious compounds are manufactured which act on the ocular tissues, but it is difficult to link up well-marked signs of degeneration with any bodily ailment. The origins of degenerations in conjunctiva and cornea are obscure, in so far as their presence has been unaccompanied by the classical signs of inflammation. In a number of cases of nodular degeneration of the cornea, sometimes more than one in a family, colleagues skilled in laboratory examinations have failed to elucidate their origin in physicochemical and other processes, as, for instance, diabetes. The ophthalmologist, therefore, views the whole subject as all but metaphysical, yet he is daily confronted by problems in which he finds in diseased eyes calcareous, crystalloid or colloidal products of inflammation which interfere with function or destroy the organs. Can it be that ordinary senile dissolution depends on the wearing out of the cell? Dr. Lewis' reference to cases of uveitis dependent on disease of the dental structures reminds me of similar cases. From teachings received I have insisted on examination of the teeth and gums in all cases of uveal and protracted tarsal and conjunctival diseases, as well as before operations on the eyeball. It has been my observation that delayed recovery after uncomplicated cataract operation has never occurred in subjects with good teeth.

Prostitution and the Army.—It is a matter of history that prostitution follows the army. In all the European armies at the present time vice and its consequences constitute one of the most serious, if not the most serious, of army problems. In some of these armies the wastage from venereal disease has been frightful. . . . From the standpoint of military strength and efficiency, such waste is serious. From the standpoint of social wholesomeness, it is more serious; for it means that not only will these men bring back into the social structure a vast volume of venereal disease to wreck the lives of innocent women and children, but they will bring back into it other influences, attitudes, and practices which will destroy homes, cause misery, and degenerate society.—M. J. Exner, M.D.

OBSERVATIONS ON TREATMENT OF FOOT CONDITIONS

C. L. LOWMAN, M.D.
LOS ANGELES

In the treatment of arch conditions by various men, and in the general literature on the subject, the relation of the transverse and longitudinal arches of the foot is not dwelt on much. I wish to call attention to a few facts regarding it.

Nearly all the anatomic and mechanical points regarding the bones of the foot and the parts they play, alone and together, in the function of weight bearing and locomotion have been ably dealt with in many special articles, and I can add but little to them. It is in regard to the clinical use of such knowledge that I wish to speak. Briefly, let us recall that anatomically we speak of two arches in the foot largely for convenience, and that actually the structure of the foot is dome shaped, doubly concave on the plantar aspect.

The weight is properly borne on the periphery, the short lateral curves having a definite relation to the long anteroposterior curves. In the more common static conditions, such as pronation, depression of the arches, "foot strain" and "weak foot," the weight is not thus borne. It is shifted inward so that the bones no longer resist the downward thrust, and the ligaments, which are required to assist in sustaining the body weight, gradually weaken and lengthen under the overload. This lengthening of the plantar structures, with the lowering and tilting of the dome, changes all its curves, and the foot becomes longer and broader than normal.

The lack of appreciation of these facts is evidenced in the plating and shoeing in many of the foot cases which I have had an opportunity to observe. I am sorry to say that some of these patients have been in the hands of orthopedic surgeons.

When the foot elongates, the distance from the os calcis to the head of the first metatarsal is lengthened in proportion to the relaxation and weight, while the phalanx remains unchanged in length. The anterior half of the foot becomes broadened in proportion to the depression, pronation and eversion, while the heel remains practically of the same breadth. Now, for a shoe to be fitted correctly, the "hinge" or breaking point of the sole should come directly under the first metatarsophalangeal joint. If a relaxed, pronated foot is so fitted, the shoe will then project beyond the great toe a distance equivalent to the amount of lengthening of the long arch due to the change in the metatarsal angle. If such a foot is so fitted and no lateral correction is made by raising the inner border of the heel, it will be encouraged to keep on lengthening, because there is not even the resistance of the laces and leather across the dorsum to prevent it.

As most patients will not be so fitted, women especially, the shoe will in consequence be too short; and when the forward thrust occurs in the metatarsal region, the toes will be crowded forward into the narrowest part of the shoe. As the shoe becomes softer and looser from age, the joint line of the foot will be pushed beyond the hinge of the sole, and faulty back pressure will occur against the heads of all the metatarsals and they will be depressed. The result will be worse in either case entirely in proportion to the amount of tapering in the toe of the shoe. If the shoe

is not straight lasted on the inner border, or the "swing" of the outer border is not very "full," as in the broad type of shoes, the toes will be increasingly cramped. Likewise the ball of the foot or cross arch in front will be depressed in accordance with the hollowness of the sole.

Patients have come to me unrelieved by treatments with plates and shoes recommended and given by orthopedic surgeons. Examination of the shoes, which often had been made to order at an expense of from $18 to $25 a pair, showed that the chief consideration had been to obtain a good grip of the heel and tilt it outward, and the toe of the shoe had been modified to placate Dame Fashion. They were made entirely too narrow to give relief from all symptoms, particularly those in the fore foot. There are many so called "anatomic," "orthopedic" and "foot form" shoes on the market which are designed without much consideration for the toes and fore foot except to be made a little wider, rounder, or of a more common sense type than the average shoes worn by women.

Many patients get relief at first because the change is radical; but if they have not been told to come back and have plates and shoes changed to meet the changes in the feet, they keep on wearing the same style and size of shoe because some prominent surgeon or orthopedist prescribed it. They do not realize that if a depressed arch is to be restored to normal and the arch plate and the shoe are to do any good except to relieve pain, the foot must become shorter and narrower. It cannot do this if the patient continues to wear a certain size plate in, say, a No. 5 shoe, when the normal foot measurement would call for a 3 or 4 shoe.

I have the same criticism to make in regard to stock or shoe store plates, which are indiscriminately prescribed and are even advocated and advertised in reputable medical journals. The average store plate is absolutely wrong mechanically. It is really a valgus shaped plate too long on the inner border and too short on the outer border. It usually has no lateral concavity and tips the foot inward into the opposite position from which it should be. To correct a valgus, the foot must be put in varus, a simple fact we all know. Yet I have seen surgeons prescribing and using plates that only increase the trouble. If the person with the flattened foot wears a No. 6 shoe, the clerk puts on a plate of corresponding size, which fits the patient and thus violates one of the commonest rules in orthopedic practice, namely, that patients should be made to fit the apparatus and not vice versa.

Certain conclusions must be drawn from such practices. The surgeon or practitioner is ignorant of the subject, or uses a stock plate because he can buy it cheaply in quantities and make a profit on it; or he is satisfied to have his patient obtain some relief from pain, to receive his fee and get rid of the patient; or he recommends certain plates and shoes because he sees them advertised in medical journals and demonstrated at medical conventions. Many seem willing to relieve pain and obtain fees rather than run the risk of losing a patient, especially a society patient, by insisting on what they know to be a correct shoe and what a normal foot should wear. They also neglect to follow up the foot needs until structurally it becomes as nearly normal as possible.

Now that the whole subject of body alinement is receiving attention, it seems to me that nothing should be more impressed on the general practitioner, the surgeon, and the more inexperienced in orthopedic ranks, than the importance of foot posture and the correct surgical use of shoes. Furthermore, as much emphasis should be laid by them on the fact that they should expect and require their patients to use a correct shoe, when they prescribe it, just as they would expect them to take medicine prescribed for some functional derangement.

THE ENDONASAL OPERATION ON THE LACRIMAL SAC*

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To many it may seem a presumption for a rhinologist to enter the sacred domain of this section and discuss a subject so intimately the field of the ophthalmologist. The *Grenzgebiet* is still a cause for strife between surgeons as between nations. My own hope is that in the domain of medicine, at least, it may soon be transcended by that higher aim, "the ultimate good to the patient," just as in national life it may ultimately be a question of "the greatest good to the greatest number." Then will humanity and benevolence rather than selfishness be the guiding principle in men's lives.

The demands of modern medicine become each day more extensive and exacting, and the specialties each day more circumscribed in their limitations. Whereas, in this country at least, it is but a short cry back to the times when the same individual encompassed, or attempted to encompass, within his domain, the diseases of the eye, ear, nose and throat; such a condition exists as a rule today only in the relatively smaller communities. Ophthalmology has come into its own as a distinct specialty, just as otology bids fair to do in the not too remote future. This assumption of authority and finality in our own limited field makes us in a way more than ever dependent on help from our fellows, according to the extent to which that field affects or is affected by the field of our fellow worker. So the ophthalmologist, who calls in the rhinologist to perform an endonasal operation on the lacrimal sac, is no more of an anomaly than the internist who invites the technician of his field, the surgeon, to perform an operation for appendicitis; the surgeon who invites the otologist to perform an operation on the mastoid process; or the rhinologist who calls to his aid the dentist in his care of a diseased antrum, or to complete the result of his tonsil and adenoid operation by attending to the proper alinement of the child's teeth. Here is an instance in which team work and not selfishness, but mutual cooperation, spells success for both, and assures, or helps to assure, a successful outcome for the patient. My own cases are only those which have been referred to me by the ophthalmologists. In fact, I have no opportunity of seeing such cases in any other way.

Until a few years ago, according to West,[1] the treatment of dacryostenosis had made no real progress for a period of twenty-five years. In 1910 West published his paper entitled "The Window Resection of the Nasolacrimal Duct," and exhibited in all seven patients operated on by this method. This paper, as

* Read before the Section on Ophthalmology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. West: Berl. klin. Wchnschr., 1914, **51**, 1633; Arch. f. Laryngol. u. Rhinol., 1913, **27**, 224, 504; Berl. klin. Wchnschr., 1913, **50**, 926.

the title indicates, referred only to the operation on the duct, but laid no claim to being an endonasal operation on the sac. In three of the cases, however, the sac itself was really opened. West soon became convinced that the opening of the nasal duct alone could not be sufficient, and that any operation, to be successful, must concern itself rather with the opening of the lacrimal sac as well. He immediately set himself about the new task, and, through the generosity of Professor Silex of Berlin, gained access to an exceedingly rich clinical material. The results of his later endeavors he reported in 1913. At that time, he reported the investigation of over 300 cases of various diseases of the lacrimal apparatus, and the operation on the lacrimal sac in 130 cases by the endonasal method. He claimed a favorable result in over 90 per cent. of the patients so operated on.

West asserts that Caldwell was the first to open the lacrimal canal, in 1893, when he reported one case. Still later, Killian and Passow reported similar cases. The idea of reestablishing the connection between eye and nose, as a passageway for the tears, was known to the ancients, who were for the most part unsuccessful in their attempts. In 1863, Berlin had revived the extirpation of the sac from without, and this had remained the operation of choice almost to the present. In 1904, Toti published the results of his attempts to reestablish the natural pathway from without by means of a skin incision at the inner angle of the eye. In 1910, von Eiken published a paper in which the approach to the sac by way of the antrum was advocated. West performed his first operation in 1908.

The various operations, previously described, were successful only in a relatively small proportion of cases. The external operations often gave rise to fistulas, and, if successful, as far as the curing of phlegmon was concerned, necessitated later the excision of the lacrimal gland to get rid of the epiphora. The resulting scar, too, was often unsightly. West's earlier operations on the nasal duct were also unsuccessful, because the stenosis occurred at the inferior border of the sac, where it joins the duct. The operation was, accordingly, inferior to and outside the field of the real difficulty in a large proportion of cases.

West's modified operation concerns itself with the lacrimal sac alone, the duct being disregarded. The free opening of the sac itself he regards as essential, if a cure is to be expected. That the sac is really opened in all cases is shown by the fact that a probe introduced into the lower punctum passes horizontally into the nose. A minute knowledge of the anatomy of the parts is absolutely essential. The technic is as follows: A quadrangular flap, covering the end of the lacrimal sac, and extending well forward over the ascending process of the superior maxilla, is resected submucously, its base of attachment being inferior. After its resection it is turned downward out of the field of operation, this inferior attachment acting as a hinge. The denuded area extends vertically through a space roughly limited by an anterior extension of two lines, the upper marking the attachment, and the lower the inferior border of the middle turbinal. Neither turbinal is encroached on, unless an obstructing hypertrophy is present. By means of appropriate chisels, a portion of the posterior border of the nasal process of the superior maxilla is chipped away, and the thin bone, covering the sac, resected. The sac itself is then grasped with forceps and a large portion of its nasal aspect resected with a thin scalpel. The submucous flap is now replaced, the posterior part, over the area of the resected sac, being first removed. The flap is held in position for twenty-four hours by packing of iodoform gauze. The after-treatment is exceedingly simple, and consists in keeping the nose free of crusts and granulations, and irrigating the sac by way of the canaliculus with a 3 per cent. solution of boric acid. As stated before, West claims favorable results in 90 per cent. of his cases.

The advantages of West's, over the previous methods, for the treatment of the various diseases of the lacrimal apparatus, he enumerates thus:

"1. The physiologic function of the path for the tears is again restored, so that not only a suppuration of the sac, a lacrimal fistula or a phlegmon is healed, but also the tears flow normally through the nose. A later epiphora is accordingly avoided.

"2. A so-called cure by probing is rendered unnecessary.

"3. The lacrimal gland is spared.

"4. A skin incision or a curetting from without, with eventual scar formation, is avoided."

This operation he has performed in every possible sort of disease affecting the lacrimal apparatus.

After the operation, certain persons, by sharply blowing the nose, can force air out through the canaliculus. West does not consider this a disadvantage, as the patients do not complain of it. Halle's suggestion for forming a valve of the mucosa, in order to prevent this, he regards as impossible of accomplishment.

A more recent endonasal operation on the lacrimal sac is that of Yankauer.[2] The latter considers the West operation unsatisfactory because of the tendency of the opening of the middle meatus to close, such objection being avoided by his improved operation.

In the operation of Yankauer, the horizontal incision is begun at the attachment of the anterior end of the middle turbinal and carried forward for a distance of 5 mm. It is then carried downward to the anterior border of the inferior turbinal and backward along its inferior, free border, for about 2 cm., or from one-third to one-half the length of the turbinal. The incision is carried well down to the bone and the roughly rectangular flap, thus outlined, resected submucously, its posterior attachment acting as a hinge. On this hinge it is folded backward and held in place by tucking it under the anterior free end of the middle turbinal. A part of this submucous resection consists of the mucous membrane and periosteum on both sides of the anterior end of the inferior turbinal to a point well back of the opening of the nasal duct. The bony portion of the inferior turbinal, so uncovered, is then resected with punch forceps. The bony covering of the canal and sac is now removed with chisel and punch forceps, and the canal at its extreme posterior aspect slit from the opening in the inferior meatus to a point well above the junction of the inferior portion of the sac with the duct. When the sac is found to contain pus, a portion of its inner wall is resected to allow for free drainage into the middle meatus. This opening into the middle meatus closes subsequently. The internal wall of the duct and sac are now folded forward and held in position by folding the previous submucous flap down on it. The latter flap is held in position by a single stitch as well as by packing. The subsequent treatment consists in removing the pack-

2. Yankauer: Laryngoscope, 1912, p. 1331, Vol. XXII, Tr. Am. Laryngol., Rhinol. and Otol. Soc., 1913, 294.

ing after twenty-four hours, and irrigations through the lower punctum, the nose, of course, being kept free of crusts while healing is taking place.

Yankauer reports in all nine patients operated on by this method, during a period of three years: "Two were cases of mucocele of the sac; the other seven were suppurative. The suppuration ceased in all cases after the operation and has not recurred in any of them. The epiphora was relieved in all but one of the cases."

The most recent operation devised is that of Mosher.[3] This method of opening the sac and duct was come on, as it were, by accident from an observation of the specimens on the cadaver in the development of Mosher's operation on the ethmoid labyrinth and frontal sinus. After removal of the anterior end of the middle turbinal and free exposure of the processus uncinatus, Mosher's stiff probe is introduced through the duct into the inferior meatus, the canaliculus having previously been slit. A roughly rectangular flap, limited anteriorly by the posterior lip of the ascending process of the superior maxilla and a portion of the superior border of the inferior turbinal, superiorly by the extreme limit of the middle meatus, and posteriorly by the extreme inner tip of the uncinate process, is now resected submucously and deflected downward and backward.

The inner wall of the lacrimal cell and bony covering of the duct are now broken through with an appropriate curet, the nasal process of the superior maxilla acting as a guide anteriorly. The fragments are removed with a conchotone. The inner wall of the duct and sac are now broken through by slowly withdrawing the probe, at the same time turning its tip sharply inward toward the septum. The probe is then reintroduced, and serves as a guide to the curetting away of the posterior tip of the ascending process of the maxilla, as well as the upper part of the processus uncinatus. The canal is subsequently widened by biting forceps after the probe is withdrawn, practically to double its previous width. A ligature is then passed through the nose upward and out through the dilated punctum, a piece of gauze being attached, kite-tail fashion, to its middle. This gauze is then drawn upward into the lacrimal sac, and the ends of the ligature fastened to the face with adhesive tape. The flap is now replaced.

After-treatment consists in removing the plug after two or three days, keeping the nose free from granulations and crusts, and keeping the passage free by passing the probe wherever it is indicated. Mosher asserts that the probe can be passed either from the nose or from the inner canthus. The operation "has been abundantly tried on the cadaver and three times on the living." Mosher admits that "it is too soon to say much about the results on the living, except that, so far, they are good."

From a review of the foregoing methods and operations it would seem that in the development and perfection of the endonasal method a possible solution of a difficulty, which has long been a perplexing one, may be reasonably expected. Certainly the external operation and its after-results have left much to be desired. The endonasal route obviates many of the disadvantages of the external operation. Whether or not the physiologic pathway for the tears into the nose can be maintained permanently in a sufficient percentage of cases at the hands of the average rhinologist is a question which time alone can answer.

3. Mosher: Laryngoscope, November, 1915, p. 739.

The results in my own series of eight cases have been fairly good. The West operation was that of choice in all but one. In this the Yankauer operation was done. In only one case was there a complete failure. In this case the antrum was accidentally entered. Whether or not this had anything to do with the unsuccessful outcome it is impossible to say. In three cases a secondary operation was performed, that is, the stenosed opening at the beginning of the middle meatus was enlarged. All were cases of dacryostenosis and cystitis, except one. This was a case of stenosis and epiphora following a permanent opening into the antrum for empyema.

My own technic differs slightly from that of West. After the submucous flap has been outlined and elevated, a probe is inserted into the canaliculus, sac and duct. If this is difficult, the assistance of the ophthalmologist is summoned. This probe is held in place by an assistant. Its pressure renders the uncovering of the duct and sac easier. When the duct is freely uncovered, the point of the probe is directed inward toward the septum, thus bulging in its septal wall. A thin scalpel is now inserted between the probe and the lateral nasal wall, and the incision carried well up beyond the isthmus, so that the probe ultimately passes horizontally into the nose, as suggested by West. In this way a considerable portion of the duct and sac is completely removed. The infiltration of a few drops of 0.25 to 0.5 per cent. novocain solution, to the dram of which from 1 to 2 drops of epinephrin have been added, following the preliminary cocainization renders the operation bloodless, as well as absolutely painless. The only pain complained of in any of my cases was that from the pressure of the lacrimal probe.

To many this operation from its description may seem difficult or impossible of accomplishment. It *is* difficult, and this difficulty I shall not attempt to minimize. The difficulty, however, is no greater than that attendant on the submucous resection of the nasal septum, and I can assert with firm conviction that any one who can perform a submucous resection can successfully perform the endonasal operation on the lacrimal sac.

In my hands the difficulties have been considerably lessened by the use of the modification of West's instruments, which I herewith present.[4]

ABSTRACT OF DISCUSSION

DR. HARRIS P. MOSHER, Boston: I have operated on nine patients. The results of four, after a year, are known. Three were operated on two years ago. When last seen the results were good. One recent case is still under treatment and the result is not yet apparent. One case was of mucocele of the sac. After nine months there was no return of swelling of the sac and the opening into the nose is patent. The second was of long standing, a suppurative sac, with a skin fistula. The eye is all right and the tears run over only when the patient gets cold. A third patient had a suppurative sac for seventeen years complicated by an infected mucocele of the ethmoid labyrinth. There is now a patent opening into the nose and the tears run over only on a cold day or in a strong wind. The fourth patient had a bony occlusion of the nasal duct which the ophthalmologists, after a number of trials, could not relieve. This man is wearing a style at the end of ten months, and with it there is no running over of tears except in a strong wind.

4. In addition to the references already given, the following will be found of interest:
Onodi: Monatschr. f. Ohrenh. u. Laryngo-Rhinol., **46**, No. 4.
Mithoefer: Ohio State Med. Jour., September, 1916.
Horgan, J. B.: The Operation of Dachryocystorhinostomy: Its Indications and After-Treatment, Jour. Laryng., Rhinol. and Otol., London, June, 1916, 225.

As to technic, if there is deviation of the septum to the side of the diseased sac, the lacrimal operation should be preceded by a submucous resection of the septum. The easiest approach to the sac is through the thin bone of the anterior ethmoid region. The steps of the operation are as follows: The anterior end of the middle turbinate is removed and the slitting probe is introduced through the cut canaliculus into the sac and on through the nasal duct to the floor of the inferior meatus. Next, the anterior ethmoid cells are exenterated. Then a cut is made in the mucous membrane of the nose along the posterior edge of the ascending process of the superior maxilla, and the probe withdrawn to the upper margin of the inferior turbinate, and when clear of the turbinate the point is pressed upward and inward and made to break through the nasal duct into the nose. The tip of the probe is then slowly forced upward, all the while slitting the inner wall of the nasal duct. The upward excursion of the probe is finally stopped by the increased resistance of the superior part of the lacrimal bone. Experiments on the cadaver have shown that this manipulation opens not only the nasal duct, but the lower two-thirds of the inner wall of the lacrimal sac. Unless it is the purpose of the operator to exenterate the lacrimal sac intranasally, the operation is finished by inserting the silver style. This may be removed at intervals and cleaned. On evidence of closure of the duct the style must be reinserted.

DR. WILLIAM B. CHAMBERLIN, Cleveland: One point I did not have time to bring out in the paper is the subsequent closure. This is a difficulty in any endonasal operation. Three of my patients were operated on the second time; but the secondary operation is comparatively a simple thing. The probe is introduced through the sac again and at the point of stenosis you can see a slight bulging. It is a comparatively easy thing to resect this with the punch forceps. In the after-treatment, if one is careful in keeping down granulations, as in any other part, epidermization will not be retarded. In many cases a preliminary submucous resection, especially a resection as high up as we dare go, is absolutely essential. It is a sine qua non of the operation.

Another point Dr. Mosher brings out in the discussion is the resection of the posterior part of the ascending process of the superior maxilla, which makes a groove for the duct. This is dense, firm bone. It is for the resection of this ascending process that West has devised his chisels, and it is for the resection of this process that I have modified his chisels, making them very much thinner, and also putting on the handle, thus enabling one to see every step of the operation. The view is less obstructed than with the West chisels, and you can insert it under the bone, and if it does not make a clean cut the bone may be fractured by a twisting motion. The forceps are a modification of the familiar Gruenwald forceps for the ethmoid, and are quite as effective as the instrument which West has especially devised for the purpose.

Managing Atypical Children.—Atypical or backward children should not be coddled, but encouraged, and, like plants of slow growth, in some instances they may be "forced." This may be done by supplying favorable conditions for growth and development, and by directing their physical activities in the right channels. Comparatively poor health is not always a contraindication, but often a decided indication for this forcing process. Many a nervous child immediately begins to improve physically as well as mentally when well directed pressure is brought to bear upon him in psychophysical education.—G. Hudson-Makuen, M.D.

THE REACTION AFTER INTRAVENOUS INJECTIONS OF FOREIGN PROTEIN *

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During the last two years, intravenous injections of foreign proteins have been used as a therapeutic agent in various conditions. Satisfactory results have been reported in a variety of acute infections. In these reports the phenomena accompanying the injection are taken up as incidental to the presentation of the therapeutic results.

With the intravenous injection of a foreign protein, a certain reaction takes place which is fairly constant in all cases. For the purpose of observing the phenomena following the injections, careful records were made in the cases of acute articular rheumatism in which this treatment was employed. Observations were also made in a few cases of chronic arthritis and lobar pneumonia.

The foreign protein employed in these cases was typhoid vaccine. The vaccine was prepared from an active culture, grown twenty-four hours on agar slants, washed off with saline solution, killed by heating at 70 C. for two hours, and preserved by 0.5 per cent. phenol (carbolic acid). The vaccine was diluted so that each cubic centimeter contained 150,000,000; and injections of from 0.25 to 0.5 c.c. were used as the average dose.

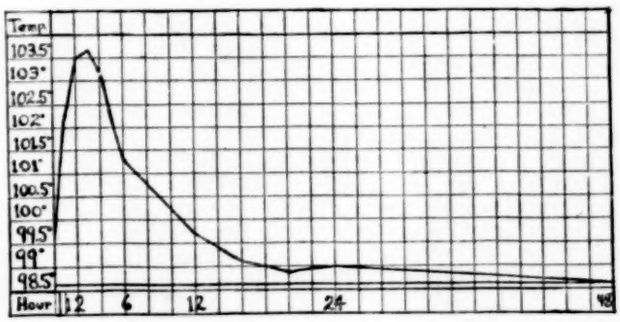

Chart 1.—Composite temperature curve following forty-seven intravenous injections of typhoid vaccine in twenty-five cases of acute articular rheumatism.

Patients were taken as they entered the hospital with no selection except to exclude certain cases in which the vaccine was contraindicated, as will be shown later. Certain routine measures were taken in the cases in which vaccine was given. The patient was allowed nothing to eat for at least one hour previous to the injection, so as to ward off nausea and vomiting. During the chill the patient was well covered with blankets. When the joints were acutely inflamed, from 1/6 to 1/4 grain of morphin was given to relieve the pain incident to the involuntary movements of the joints during the chill. The patient was kept in bed three days after all symptoms subsided. The vaccine was injected in the morning about three hours after breakfast, and the general symptoms, temperature, leukocytes and blood pressure were followed through the day and on the next morning.

THE GENERAL REACTION

Certain general symptoms were noted following the injection. For from half an hour to an hour there is no apparent change in the patient's condition. Then a chill occurs, which may become quite severe, and is accompanied with the usual symptoms of cyanosis and rapid pulse. With the onset of the chill the patient frequently complains of a dull temporal headache; nausea and even vomiting may be frequent at this time. The chill lasts from fifteen to thirty minutes and sub-

* From the medical clinic of Dr. Joseph L. Miller at Cook County Hospital.

sides gradually, the headache and nausea passing away with the chill. Following the chill there is a rise in temperature, and there are changes in the leukocyte count, in blood pressure and in the differential count, all of which will be more fully considered below. Following the chill there is profuse sweating. The sharp pains in the joints disappear shortly after the chill, though a feeling of soreness or stiffness may persist for a short time.

With large doses a more marked reaction was observed. In certain cases the average dose proved to be excessive, especially in those cases in which the patients were bedridden for some time. In these cases there was a severe rigor lasting one or two hours, and accompanied by marked cyanosis and a rapid, weak pulse. Following the chill the patient became very weak and showed signs of collapse. There seems to be a profound vasomotor disturbance, which may account for the sudden deaths that have been reported following intravenous vaccines.

Associated with severe reactions certain other symptoms were noted. Herpes occurred in three cases. The lesions were noted about the lips and inside the mouth. Prolonged headache occurred in several cases. Headache occurred in practically all cases during the chill; the headache was not constant in intensity, nor did the intensity seem to bear any relation to the severity of the reaction. Vomiting occurred in four cases with a severe reaction.

Temperature Curve.—Chart 1 shows a composite curve of forty-seven injections in twenty-five cases of acute articular rheumatism, and may be taken as a typical temperature curve. Little change is noted in the temperature until the chill occurred. Following the chill there is an abrupt rise until a maximum of 103.6 F. is reached four hours after the injection, after which there is a gradual fall to nearly normal in sixteen hours, and to normal at forty-eight hours. This curve corresponds closely to the curve obtained by Culver[1] in gonorrheal cases. Composite curves of primary and subsequent injections are similar, though the subsequent injections have a slightly lower curve. With the primary injections the maximum temperature of 103.8 was reached four hours after the injection. The highest individual maximum temperature observed was 106.6 three hours after the injection. The lowest individual maximum temperature was 102 three hours after the injection.

Leukocytes.—Chart 2 shows a composite curve of forty-three injections in twenty-four cases, and may be taken as a typical leukocytic curve. Following the injection and especially at the time of the chill there is a fall in the leukocyte count. The count may fall to normal or below, resulting in a leukopenia. This will be noted in the chart, the count falling from 14,200 to 5,900. Toward the end of the first hour after the injection there is a gradual increase which continues until the highest count (39,900) is reached, about six hours after the injection. Following this there is a fairly rapid fall so that by the end of forty-eight hours the count is about the same as before the injection. This curve is similar to that obtained by Culver[1] in his cases.

Composite curves of primary and subsequent injections are similar, though the subsequent injections generally produce a slightly lower leukocytosis than the primary or preceding injection. The highest individual count was 77,200 six hours after the injection. The lowest maximal count was 13,600. Certain cases showed a persistent leukocytosis which did not seem to have any bearing on the severity of the infection or on the therapeutic result. The degree of leukocytosis did not seem to have any bearing on the results obtained, though cases with a marked reaction and a corresponding increase in leukocytes gave the best response to the treatment. With large doses the degree of leukocytosis was greater, counts of from 90,000 to 115,000 being noted.

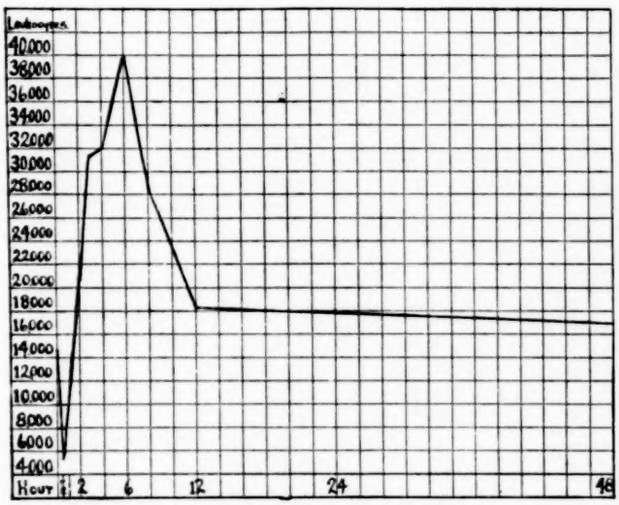

Chart 2.—Composite leukocyte curve following forty-three injections in twenty-four cases of acute articular rheumatism.

Blood Pressure.—Chart 3 is a composite of thirty-eight injections in nineteen cases, and may be taken as a typical blood pressure curve. During the first hour after the injection, and especially at the time of the chill, there is a rise in blood pressure. This is not well shown on the chart, owing to fewer observations made, than at other points on the curve. This is due to the difficulty in taking the blood pressure while the patient is chilling, the twitching of the muscles making accurate readings difficult, and at times impossible. Probably during the height of the chill the rise is greater than shown by the readings which were made. After the chill there is a fall in blood pressure, reaching a maximal drop, 92 systolic and 60 diastolic, about six hours after the injection, and then coming up gradually to nearly normal in forty-eight hours. The systolic and diastolic pressures vary about equally at all times of the reaction. The composite curves of primary and subsequent injections are much alike, both diastolic and systolic, though in the subsequent injections the fall was not quite so great. The lowest single reading during the fall was 60 systolic and 40 diastolic six hours after the injection. With large doses a greater drop was noted. These patients show marked signs of shock.

Differential Blood Counts.—Considerable variation is noted in the differential count following the injection, as regards both the relative percentages and the absolute values.

Following the injection there is a steady rise in neutrophils from the first, reaching a maximum point two or three hours after the injection, and then falling gradually in forty-eight hours to a percentage

1. Culver, Harry: The Treatment of Gonorrheal Infections, THE JOURNAL A. M. A., Feb. 3, 1917, p. 362.

slightly lower than before the injection. The highest individual rise was to 94 per cent. from 60 per cent. In absolute values the neutrophils follow almost exactly the total leukocyte curve, showing that the increase in the leukocyte count is mainly due to an increase in neutrophils. During the chill there is a fall in the absolute value, followed by a sharp rise in six hours and then a fall to the same level as before the injection.

The large lymphocytes show a rapid fall following the injection, reaching the lowest point two or three hours after the injection and then rising to a percentage slightly higher than before. The most marked individual fall was from 23 to 3 per cent. In absolute values, there is also noted a fall during the chill, followed by a slight rise reaching its maximum in eight hours, and then falling to normal. While the percentage curve shows a steady rise after eight hours, the absolute value remains about the same, owing to the decreasing total leukocyte count.

The small lymphocytes show a slight rise during the chill followed by a fall two or three hours after the injection, then gradually rising to about the same percentage as before. The most marked individual fall was from 20 to 3 per cent. In absolute values there is a decrease during the chill, owing to the decreased total leukocyte count. With the increasing leukocyte count there is also an increase in small lymphocytes to about normal, where it remains constant.

The eosinophils show an absolute and relative decrease during the first six hours after the injection, followed by an absolute and relative increase. Simon[2] noted this variation in eosinophils following intraperitoneal injections of killed bacterial cultures. He found that subsequent injections were followed by a higher percentage of eosinophils than the preceding injection.

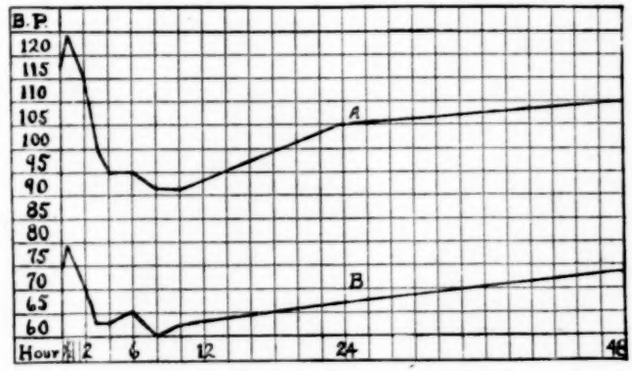

Chart 3.—Composite blood pressure curve following thirty-eight injections in nineteen cases of acute articular rheumatism: *A*, systolic; *B*, diastolic.

The basophils show a slight relative and absolute increase during the first eight hours, followed by a relative and absolute decrease.

The urine showed no marked change following the injection. At the end of twenty-four hours there was a slightly higher specific gravity due probably to the loss of fluids from the profuse sweating. No albumin appeared when none was found before the injection, nor was there any change when albumin was present before the injection.

Certain changes occur in the blood serum following the injection. Work by Jobling and Petersen,[3] and later work by Petersen indicates a rise in ferments and a decrease in antiferments at the time of the reaction.

Four patients with chronic arthritis were also treated by intravenous vaccines with reactions similar to those in acute articular rheumatism. Three patients with lobar pneumonia also received the vaccine. Early cases in the second or third day were chosen, and a similar reaction occurred, except that the temperature, instead of remaining low after the injection, gradually rose again in forty-eight hours to about the same level as before, where it continued until the natural crisis. No changes were noted in the physical findings following the injection.

Intravenous injections of vaccine are contraindicated in those cases in which the vasomotor system is weakened, and when the nervous system is unstable. In these cases collapse may occur, with a possibility of death resulting. Organic heart disease requires cautious treatment. In serious lesions the injection is absolutely contraindicated, as the heart becomes dilated and overworked, so that cardiac failure may result. In one case of this series with a mitral murmur, following the injection the heart dilated 2 cm. to the right, and 4.5 cm. to the left. Gradual recovery occurred, however, in twenty-four hours.

In acute infections, as lobar pneumonia, small doses are advisable because of the weakened cardiac musculature. Chronic alcoholism may be an absolute contraindication, as the shock of the vaccine reaction may precipitate an attack of delirium tremens, resulting in a prolonged or fatal course. In one case of acute articular rheumatism in a heavy alcoholic, the patient received the usual dose of vaccine and had a typical reaction following. Thirty-six hours afterward he became delirious and remained so fifty-two hours, when death occurred.

THERAPEUTIC RESULTS

In twenty-five cases of acute articular rheumatism treated with vaccine, the following results were obtained: Ten cases cleared up after a single injection. All were recent and uncomplicated cases. No recurrences were noted while under observation, nor did any of these patients return to the hospital. Three cases cleared up slowly, requiring two or three injections. The shoulders were the last joints to clear up, the stiffness and soreness seeming to remain longer than in the other joints. Two cases recurred ten days after clearing up nicely after the first injection. These patients remained well after a second injection. Four cases were complicated, two with endocarditis, one with pericardial effusion, and one with empyema. In these cases there was a continued high temperature, and the patients received only temporary improvement after the vaccines until placed on salicylates. Four other cases were resistant to vaccines and cleared up under intravenous injections of sodium iodid. The remaining two patients are the one developing delirium tremens with a fatal result as cited above, and the other leaving the hospital refusing further treatment.

SUMMARY

Following intravenous injections of a foreign protein, certain definite phenomena occur. A general reaction is first noted with a chill accompanied by headache and nausea, and followed by sweating and relief of joint pain.

2. Simon: Internat. Clin., 1906, **1**, 166.
3. Jobling, J. W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, THE JOURNAL A. M. A., June 3, 1916, p. 1753.

Following the chill there is a rise in temperature reaching a maximum about three or four hours after the injection and falling to normal in forty-eight hours.

There is a fall in leukocytes followed by a marked increase reaching a maximum six hours after, and gradually falling to the same level as before the injection.

The blood pressure rises during the chill, then falls, remaining low for three or four hours, and rising gradually to normal.

There is considerable variation in the differential counts, but the main change is an absolute and relative increase in the neutrophils.

The urine shows no definite change following the reaction. Intravenous vaccines are contraindicated in marked cardiac lesions and chronic alcoholism.

Successful results were obtained in 40 per cent. of the cases of acute articular rheumatism after a single injection and in 52 per cent. after two or more injections.

TREATMENT OF PARESIS BY INJECTIONS OF SALVARSAN INTO THE LATERAL VENTRICLE

SECOND REPORT

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In our first report of this method of treatment of paresis,[1] only three patients had received any systematic treatment. Our first injection was given, Jan. 12, 1915. Since that time we have made injections in other cases, ten of which were treated at a sufficiently remote date to make a report now of value. Thus this article is based on the results obtained in the first thirteen consecutive cases, in all but two of which three injections were given, and in two, five injections each. A great deal of care has been taken in studying these cases both before and after treatment. We were particular to select for injection only those patients who undoubtedly had paresis, and in all cases the results of the examination of the spinal and ventricular fluids were carefully studied both before and after each injection. In none of these cases were there any symptoms of an alarming nature after the injections. Few patients showed even a slight rise in temperature, and none remained in bed longer than three days. Two of the thirteen, Patients 9 and 10, died, not from the effect of the operation but months after their final injection, dying in the terminal stage of paresis. Two other patients, one of whom received only one injection, were unimproved and have since been committed to asylums. The remaining nine have shown decided improvement, not simply in the serology, but from a clinical standpoint. They are much less emotional, their memories are better, they are improved physically and mentally, and they are still improving.

In five of the nine (Cases 4, 5, 6, 7 and 8), there has been an exceptional improvement. These five patients have been able to return to their work and are now self supporting. They had been unable to work before coming to us for from three to eighteen months. Following injection and the period of several months' rest we advise after treatment, they have now been at their work for from five to eighteen months. Although two of these patients appear to be entirely normal and have been working steadily for more than a year, it is still too early to assert that any of them are cured. A period of three years, and possibly five years must elapse, without deterioration, before they can be considered free from danger of recurrence.

Our experiments on animals, as reported in the first paper, have shown that fluid introduced into the ventricle reaches all portions of the cortex of the brain and cord and has a much greater spread and diffusion than one introduced by any other method. It is only natural, therefore, that the improvement noted in these cases is such as has never before been obtained in any series of cases.

Not one of these thirteen could be termed an early case. The observed symptoms had existed for from six to twenty months. In several, however, the deterioration was but slight, and it is in these cases that we have obtained the maximum improvement.

In regard to the physical signs, naturally we have not been able to influence the Argyle Robertson pupil or to any extent the increased reflexes. However, we have seen the tremors of the face and tongue and dysarthria, if moderate, disappear after treatment.

Beginning with 0.6 mg. of salvarsan in the first case, we have gradually increased the strength of the serum until now we are giving double the initial dose. We do not know yet whether or not we have reached the maximum dose, or whether we are timing the injections so as to obtain the best results. It has been our custom to give the second injection a week or ten days after the first, and the third injection two weeks later. There is no positive reason for this, and it is purely tentative. Probably in the light of future experience, we may find it better to give it at different intervals. Probably we shall find it necessary to give more than three injections at first, and then, after several months, to give in some cases another series of injections. These are points that can be determined only by a wider experience and many more cases.

The harmlessness of the operation and the excellent results so far obtained lead us to urge that this form of treatment be universally adopted in the early stages of the disease. We have not found, and do not believe, that it has any effect in even retarding advanced cases. But it certainly seems to us that in the beginning of the disease, before serious changes have taken place in the cerebral structure, it holds out the best hope of improvement, and perhaps permanent stoppage of the disease, that we know of today.

SURGICAL ASPECTS

The operative technic which we are now using is the same as that described in the first paper. It is reasonably simple, has proved entirely safe, and we have seen no reasons for changing it. The time required for an intraventricular injection by this method varies from twenty to thirty-five minutes, the greater part of which is consumed in the gradual

1. Hammond, G. M., and Sharpe, Norman: The Treatment of Paresis by Injections of Neosalvarsan into the Lateral Ventricle, THE JOURNAL A. M. A., Dec. 18, 1915, p. 2147.

escape of the cerebrospinal fluid, and the slow introduction of the serum, which enters entirely by gravity.

Others have used various modifications of this method, chiefly with the view of "saving time." One of these modifications has been the puncture of the ventricle by a sharp needle to which is attached a large syringe. The fluid is removed by suction, and the serum is then forcibly injected, the whole operation requiring only fifteen minutes. This procedure, which resulted disastrously in at least one instance, cannot be too strongly condemned. No surgeon of any experience in brain surgery would attempt the introduction of sharp instruments into the brain substance, and especially the forcible withdrawal and injection of fluids by means of a syringe into the lateral ventricle, where the consequences of a hemorrhage would be disastrous.

Another modification suggested requiring only from ten to fifteen minutes, is the perforating (under local anesthesia) of the scalp and bone (and occasionally the cerebral cortex) by means of a small drill, slightly larger than the ventricular cannula. Through this opening the cannula is blindly inserted into the ventricle; this procedure would be most dangerous. When one considers the number of large veins that are encountered in this area near the sinus, this method could be safely relied on to result disastrously in a certain percentage of cases. In our method, which consists of a ⅜ inch trephine opening under ether with incision of the dura, we obtain a clear view of the cortex and select a point free from vessels for the introduction of the cannula, thus avoiding the danger of cortical hemorrhage. By this method we have performed thirty-nine injections in this series of thirteen consecutive cases with no deaths and without any accidents. The patients are out of bed on the second day and ready to leave the hospital on the fourth day. All subsequent injections can be done under local anesthesia, the scalp being infiltrated over the original trephine opening; but we insist on incision of the scalp, and inspection of the cortex before introducing the ventricular cannula.

In some of our cases there has been a rise in temperature to 101 or 102 F. for from twelve to twenty-four hours following injection, with a corresponding increase in the pulse rate; but in no case have the reactions been such as to give rise to any anxiety.

Those cases in which, at the first injection, there has been found much fluid on the cortex or in the ventricle have shown the minimum of improvement following treatment, and we have come to look on the quantity of fluid found at injection of value as a prognostic factor.

In regard to the number of treatments necessary, the giving of only three injections has been purely arbitrary on our part, and was due to the marked clinical improvement following this number of treatments. As the laboratory data show, it will be necessary in some cases to give more than three injections, probably double this number. For example, in Case 12, in which the fluid Wassermann and colloidal gold reactions were strongly positive following the third injection, though the clinical improvement was marked, now, following the fifth injection (given since the tables were made up), the fluid Wassermann is negative and the colloidal gold reaction much reduced, and the clinical improvement continues. In two of the patients, in spite of the fact that they are apparently normal, and have been at work for over a year, the fluid Wassermann and colloidal gold reactions are now as strongly positive as before the first treatment. This has led us to place greater reliance on the clinical symptoms in determining improvement, and to suspect that in some cases the fluid syphilitic reactions, as has been found in blood reactions, may be unchangeable, even though the disease process has been eradicated.

TABLE 1.—RESULTS OF COMPLEMENT FIXATION REACTIONS*

Case	Blood Serums					Cerebral Fluids				Spinal Fluids				
	Before Treatment	After First Treatment	After Second Treatment	After Third Treatment		Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	
3 A. M.	—	—	—	.....	.....	—	—	.....	—	.....	—	.....	±	
4 B. P.	++++	++++	++++	++++	.....	++	++++	+++	.....	++++	.....	++++	—	++++
5 J. B.	—	—	—	.....	—	±	±	++++ (8 C.)	.....	+++	.....	.....	.....	++++ (8 C.)
6 J. M.	.....	.....	.....	++++ (8 C.)	.....	.....	.....	.....	.....	—	.....	.....	++++ (8 C.)	
7 W. vH.	—	—	—	++++	.....	.....	—	.....	— (8 C.)	—	.....	.....	++++ (8 C.)	
8 J. McQ.	—	.....	—	.....	.....	—	—	.....	.....	++++	+++			
9 J. B.	++++	++++	++++	++++	.....	++++	.....	++++	.....	.....	++++			
10 E. McC.	++++	++++	.....	.....	.....	++++	++++	.....	.....	.....	.....	++++		
11 S. B.	++++	++	++	.....	.....	++++	—	—	.....	++++	++++			
12 A. C.	++++	++++	.....	.....	.....	++++	++++	++++	.....	++++				
13 T. B.	++++	.....	++++	.....	++++	++++	.....	++++	.....	++++	.....	.....	.....	++++

* The signs ++++, +++ and ++ mean that the reaction was positive; ±, doubtful; —, negative.

In our first cases we gave 0.6 mg. of salvarsan in blood serum. The dosage has gradually been raised so that now, as an initial dose, we give 1 mg. of salvarsan in salvarsanized serum, and have given 1.2 mg. This is three times the dose that can safely be given intraspinally. The reaction following 1.2 mg. has been no greater than that following 0.6 mg., that is to say, practically nothing. It is impossible to say now what the maximum dose is that can be given safely. We intend to increase gradually the dosage in each succeeding case, and in this way perhaps reduce the number of injections necessary.

LABORATORY DATA

The laboratory work done in the conduct of this series of cases may be considered under two heads: (1) the preparation of the medicated serums, and (2) the examination of the patients' blood serums, and cerebral and spinal fluids.

The medicated serums were prepared simply by the addition of salvarsan or neosalvarsan to 40 per cent. serum in 0.9 per cent. sodium chlorid solution. In brief, the method is as follows:

Blood, to the quantity of from 40 to 60 c.c., is drawn by means of suction from a vein at the bend of the elbow into a sterile needle and tube. The blood is drawn usually late

in the afternoon of the day before that set for the treatment. The blood is incubated at 37 C. over night. It coagulates and the clot contracts. On the following morning there is usually more than enough perfectly clear, cell-free serum available, which is easily removed from the tube by means of a bulb pipet. Twelve c.c. of the serum are transferred directly to a graduate, 18 c.c. of sodium chlorid solution are added (making a total volume of 30 c.c. of a 40 per cent. serum), and the graduate is immersed in a water bath at 56 C. for thirty minutes. Inactivation destroys complement, serum enzymes and vegetative micro-organisms. There should be none of the latter. Any one who prepares serums should be certain of his technic. After inactivation the serum is kept on ice until called for. Just before use it is medicated by the addition of salvarsan or neosalvarsan. The quantities used were usually fractions of a milligram, from 0.6 to 0.9. A few doses of 1.2 mg. were given with no untoward effects.

Swift[2] has determined that "the addition of salvarsan directly to serum produces a more potent mixture than results from the serum from blood, to which salvarsan has been added in equivalent amounts." But still better is the mixing of "small amounts of salvarsan with the serum of a salvarsan treated patient." He attributes the "increase in activity of salvarsanized serum produced by heating to 56 degrees C." as "due in part to the removal of inhibitory substances in the serum and, in part, to a direct increase of spirocheticidal power in the heated salvarsan."

We have heated our serums before the addition of the medication. It is quite possible that the fluid changes (cell count, globulin content, Wassermann and colloidal gold reactions) would have been more marked if the serums had been heated after medication, and probably still more marked if the patients had received intravenous doses of salvarsan from half an hour to an hour prior to the bleeding. The latter method we are now using.

THE EXAMINATION OF THE BLOOD SERUMS AND OF THE CEREBROSPINAL FLUIDS

1. A small portion of the serum from the blood drawn for the preparation of the medicated serum was put aside each time and was submitted to the complement fixation test for syphilis.

One set of tubes is incubated at 37 C. for one hour. The other set is placed in the ice-box, the temperature of which is about 8 C., for at least four hours, or, conveniently, overnight.

The hemolytic system is then titrated to determine the unit of amboceptor. Two tenths c.c. of a 5 per cent. suspension is taken as the unit of blood cells, 0.1 c.c. of a 10 per cent. solution as the unit of complement, and the amboceptor is so adjusted that 0.1 c.c. is sufficient to effect complete hemolysis in fifteen minutes at 37 C. Two units of amboceptor are used in the tests.

At the expiration of the period of incubation for fixation, 0.4 c.c. of sensitized cells is added. The tubes are reincubated until the central tubes show complete hemolysis, when the readings are made.

We have found that the reaction with the cholesterinized antigen at 8 C. is the most sensitive, as it yields a larger percentage of positive results in known syphilitics than does any of the other reactions; but we have found also that the reaction with the simple alcoholic extract antigen at 8 C. is most reliable because it gives almost as many positive reactions in known syphilitics as does the former test and no positive results in doubtful cases, in which a diagnosis of syphilis is possible but not highly probable.

Cases 3, 5, 7 and 8 gave negative blood reactions before intraventricular treatment was begun. The reaction has remained negative in Cases 3, 5 and 8. Case 7 shows a ++++ reaction in the fourth column. This, I feel, is simply an instance illustrative of the greater delicacy of ice-box fixation. Cases 4, 9, 10, 11, 12 and 13 gave positive blood reactions before treatment. In Cases 4, 9, 10, 12 and 13, the test is still just as strongly positive. In Case 11 there appears to be a diminution in the degree of positivity. Except in Case 11 there is no evidence of any effect by this treatment on the complement fixation reactions of the blood serums in this series of cases.

2. A specimen of the cerebral fluid was obtained just prior to each intraventricular injection. For various reasons, some or all of the examinations were not made of some of the specimens. Some of them were too bloody. Some were delayed in transit from the operating room to the laboratory, and occasionally a specimen has been mislaid or lost in transit.

There has been no regularity in the matter of lumbar punctures. Those spinal fluids of which we have records were drawn in sporadic efforts to compare the findings in them with those of the cerebral fluids. The results of such efforts have been so gratifying as to warrant our making spinal punctures a routine event at each admission. The fluids were collected in three samples, so that usually one sample was blood free. This specimen was employed in the tests. The cell count was done as soon as possible after the fluid was drawn, usually within fifteen minutes. An ordinary Thoma-Zeiss counting chamber with Zappert-

TABLE 2.—CELL COUNTS AND GLOBULIN TESTS

Case	Cell Counts									Globulin Tests *								
	Cerebral Fluids				Spinal Fluids					Cerebral Fluids				Spinal Fluids				
	Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	Before Treatment	After First Treatment	After Second Treatment	After Third Treatment		Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	
2 A. M.	..	..	..	..	..	..	..	12	..	++	±	+	..	++	..	..	+	
4 B. P.	25	..	40	..	25	..	4	1	1	±	++	+	..	+	..	+	±	±
5 J. B.	170	190	..	..	23	..	..	..	2	±	—	..	..	+	..	..	..	—
6 J. M.	..	..	..	..	..	..	5	12	..	..	..	..	..	..	..	±	+	
7 W. vH.	..	7	25	..	10	19	38	..	..	..	..	±	..	±	±	±		
8 J. McQ.	..	..	5	..	..	..	5	..	..	..	—	..	..	++	+			
9 J. B.	5	..	..	..	..	11	..	..	..	+	..	±	..	..	—			
10 E. McC.	97	18	..	..	..	..	140	..	..	..	—	..	..	..	..	±		
11 S. B.	..	7	12	..	20	20	..	..	..	..	±	..	..	±	+			
12 A. C.	40	10	11	..	23	..	..	..	..	..	±	±	..					
13 T. B.	10	30	11	..	24	..	..	..	23	++	±	±	..	++	..	..	..	+

* Postive globulin tests were indicated by ++, +, ±; negative, by —.

2. Swift, H. F.: Jour. Exper. Med., 1916, **24**, 373.

Ewing ruling was used, and no diluent or staining fluid was employed. With a little practice it becomes an easy matter to differentiate the white cells from the occasional red blood cells, some of which are commonly found even in fluids which appear to the naked eye to be quite free of blood. A proper regulation of the lighting of the preparation is the most important consideration. A white light, preferably daylight, reflected by the plane surface of the mirror, is most satisfactory. The iris diaphragm should be about three quarters closed. Viewed with No. 2 or No. 4 ocular and No. 3 objective (Leitz) or the low, dry objective of any other system, the white cells appear as little bits of mother-of-pearl in contrast with the red cells, which seem faintly yellow gray. Some workers prefer to use a staining fluid, such as methylene blue or methyl violet.

The "globulin" tests used were the phenol test of Pandy, the ammonium sulphate tests of Nonne and of Ross-Jones and the butyric acid-sodium hydroxid test of Noguchi. The Pandy test is especially convenient. A drop of the spinal fluid is added to 1 c.c. of a saturated aqueous solution of phenol (carbolic acid). The presence of protein is indicated immediately by the recurrence of a reaction ranging from a mere opalescence to a milky turbidity. If the Pandy test is positive, the other tests are done; if negative, the others are omitted.

tion except in Cases 4, 8 and 11. In Case 8 the cerebral fluid gave a negative reaction and the spinal fluid a positive reaction, even before the institution of intraventricular treatment. This is a rather striking phenomenon. These findings are not isolated by any means. They were confirmed, as, Oct. 17, 1915, the spinal fluid gave a positive reaction, whereas, Dec. 29, 1915, the cerebral fluid again yielded a negative reaction. I have no record of a gold test in this case. Case 11 exhibits a similar phenomenon. Aug. 23, 1916, the spinal fluid gave a positive Wassermann reaction, and the gold curve was that of paresis. September 7, the cerebral fluid gave a positive reaction and a paretic curve. On that date the patient had his first treatment. October 7, his spinal fluid again gave a positive reaction and a paretic curve, but the fluid removed from the ventricle gave a negative complement fixation test and the indiscriminate syphilitic curve. On the other hand, in Case 4, although before treatment and after the first and second treatments both fluids gave positive complement fixation reactions, after the third treatment the spinal fluid gave a negative test. Jan. 27, 1917, the spinal fluid gave again complete fixation.

COMMENT

The alterations in the cell counts, subsequent to treatment, are not sufficiently striking or sufficiently uniform to warrant any general statement concerning the effect of these treatments on the cerebrospinal pleocytosis.

TABLE 3.—COLLOIDAL GOLD REACTIONS

Case		Cerebral Fluids				Spinal Fluids				
		Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	Before Treatment	After First Treatment	After Second Treatment	After Third Treatment	
3	A. M.	55555554210	55421000000	55542100000	.....	.....	55553200000	.....	55544221110	
4	B. P.	55554444220	55555422210	55542211000	.....	.....	.....	54221000000	55555543220	55555555220
5	J. B.	00011100000	11100000000	00011100000	.....	11111000000	.....	.....	.....	22231111000
6	J. M.	.....	.....	55555552200	.....	.....	.....	.....	54222100000	55554322110
7	W. vH.	.....	.....	.....	55555442100	.....	.....	.....	23442211100	55555442100
8	J. McQ.									
9	J. B.	.....	.....	22210000000						
10	E. McC.	12221000000	12221000000	.....	.....	.....	.....	11112221100		
11	S. B.	55553222210	02211100000	55532100000	.....	55555432110	55555532110			
12	A. C.	55555432100	55432100000	55555432100	.....	55222222210				
13	T. B.	.....	55555210000	55555555210	.....	55443211000	.....	.....	.....	55555443310

"Globulin" tests are recorded thus: strongly positive, ++; positive, +; weakly positive, ±; negative, —. There is a large personal factor in reading globulin reactions, more so, perhaps, than in any other spinal fluid test.

The technic of the complement fixation reaction done on the cerebrospinal fluid varied from that done on blood serum in only one respect. The quantities of serums used were 0.04, 0.04, 0.04 and 0.08 c.c. The cerebrospinal fluid was employed in larger amounts; 0.2 c.c. was used with each antigen, and 0.4 c.c. for the control. In other respects the tests were identical. The spinal fluids were heated before use to avoid possible anticomplementary action.

The records of the fluid findings are lamentably incomplete. It is apparent in Table 2 that the cell count in the cerebral fluid may range from 5 to 190, in the spinal fluid from 5 to 140; that the cell count in the cerebrospinal fluid removed from the ventricle differs from that removed from the lumbar region of the spinal subarachnoid space (except in Case 2, at the first examinations), and that the difference is sometimes great. It may be seen also that the globulin content ranges from — to ++ in each fluid, and exhibits equal concentration in both fluids or unequal concentration. These remarkable differences do not obtain with respect to the complement fixation reac-

The findings in the case of the globulin content are more susceptible to expression in a general statement. The globulin content, both in the cerebral and in the spinal fluids, was definitely diminished by this treatment.

The effect of treatment on the Wassermann reaction is not appreciable in Cases 2 and 11. In Case 4 the spinal fluid gave ++++ before treatment, ++++ after the second treatment, negative after the third treatment and ++++ again four months later. Case 11 exhibits no change in the Wassermann reaction in the spinal fluid, but after the first treatment shows a change in that of the cerebral fluid from ++++ to —, which was found to be — after the second treatment also.

There is an apparent increase in the strength of the Wassermann reaction in the cerebral fluid in Case 5 from ± to ++++. There is also an apparent change in reaction in the spinal fluids of Cases 3 and 6; in Cases 3, from — to ±, in Case 6, from — to ++++. These increases are probably only apparent, as the original determinations were made by the incubator method alone, the latter by the ice-box method as well. The ice-box method is much more

delicate in the detection of complement fixing bodies than is the incubator method.

Cases 3, 4, 6, 7, 11, 12 and 13 all gave typical paretic curves, both with cerebral fluids and with spinal fluids. In Cases 7 and 11, a transient effect was produced on the curves. In Cases 3, 4, 6, 12 and 13 no appreciable change has been wrought in the colloidal reactions.

The colloidal gold reaction appears to be a valuable aid in the diagnosis of syphilis of the central nervous system, in particular of paresis. The performance of the test is easy, requiring little apparatus, time or experience. Although a satisfactory theoretical basis for the reaction has not been advanced, the test seems to be of great practical value.

The preparation of the colloidal gold solution presents some difficulties to the beginner, but, in this as in everything else, persistent effort with careful attention to details is certain to be rewarded with success. The essentials are chemically clean water and glassware and reagent chemicals.

We have done the colloidal gold test on the fluids since November, 1915. There is a record of a colloidal gold reaction in all cases except Cases 1, 2 and 8. In Cases 5, 9 and 10 the gold reactions are not those of paresis. I desire to lay no emphasis on the absence of the paretic curve in Case 9, because in that case we have the record of only one examination. That test was made on the cerebral fluid after the patient had had two intraventricular treatments. I should like to have had one or two more specimens of the fluids. Patient 10 was a woman who died in advanced paresis; but she had had intensive intravenous medication and some intraspinal treatment. Such treatment, particularly the intraspinal, has a pronounced effect on the gold curve. Case 5, however, seems to me to be different. The patient, a man, had had no treatment except "pills," probably of red mercuric iodid. I strongly suspect that this is a case of cerebrospinal syphilis in contradistinction to paresis.

SUMMARY

The blood serums, the cerebral fluids and the spinal fluids of eleven patients with paresis undergoing intraventricular treatment with neosalvarsanized or salvarsanized serum were examined at irregular intervals, before treatment, after the first treatment, after the second treatment and after the third treatment. Some patients have been examined since, after a lapse of from four to eight months. The fluid changes were either nil or so slight as to be negligible in most instances.

Model House for Philippines.—The director of health of the Philippines and his associates have designed a model house for the islands to overcome the sanitary and other shortcomings of the nipa material used for house construction. The material used is fireproof and is composed of cement, sand and nipa, or husks of rice, reinforced by bamboo. This material is formed into shingles for the roof and slabs for the sides. They are formed in molds and cured in water after being removed from the molds. The cost of the model house made from this material is about $250, practically the same as for nipa construction, including the yearly repairs. The life of the model house is about twenty-five years. The advantages of this house are its better sanitary qualities, affording no harbors for vermin and insects, and its fire-resisting qualities, better ventilation, etc. The health department has built several model houses, and will endeavor to have the new construction replace the old.

A REPORT OF THE USE OF DICHLORAMIN-T (TOLUENE-PARASULPHONDICHLORAMIN) IN THE TREATMENT OF INFECTED WOUNDS *

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The search for the perfect germicide began when Lister first applied the principles of Pasteur to the practice of surgery. The perfect germicide should meet two simple requirements: It must kill all parasitic life, while causing no harm to any cell of the living body.

The problem has been partially solved for certain groups of infective agents, all of which, however, belong to the lower forms of animal life. The infective agents more closely related to the plant kingdom, the bacteria, have shown a greater resistance to lethal agents than is possessed by the cells of the animal body, and therefore the great problem of surgery, the prevention and control of bacterial infection, remains only partially solved.

The lethal effect of all the usual germicides on the animal cells, with the clinical result of retardation and inhibition of the natural processes of repair, have become so well recognized of late years that an attitude of antiseptic nihilism has existed. Surgeons have developed a technic which has depended somewhat on soap, water and alcohol, but chiefly on the natural bacterial resistance of the patient.

In civil surgery, in which by far the large majority of the wounds were primarily clean, this technic was usually sufficient to prevent the introduction of infective agents in numbers, or virulence, beyond the natural resistance of the patient; and in that small proportion of cases in which the primary wound was overwhelmingly infected, as acute suppurations and infected traumatic wounds, clinical experience had shown that the small germicidal effect of practically all of the classical agents was nearly always overbalanced by their destructive action on the human tissues, so that the routine treatment consisted in mechanically removing the cause whenever possible, instituting drainage when indicated, and the subsequent constant or interrupted use of physiologic sodium chlorid solutions, thus trying to avoid the destruction of the human tissue cells without interfering with the processes of natural immunity and bacterial resistance.

The demands made on surgery by the extensive suppurating wounds of modern warfare have reopened this question and made necessary a further search for an agent which would meet the requirements of a per-

* Read before the American Surgical Association, Boston, June 2, 1917, by Robert G. Le Conte, M.D., Philadelphia.

fect germicide. In military surgery the problem has not been one of the prevention of infection, asepsis, but up to the present, distinctly one of treatment of infection, antisepsis, for practically all military wounds, with the exception of a small proportion of bullet wounds, are virulently infected before coming into the hands of the surgeon.

The personal experiences of two of the writers working with both the English and French wounded, were the same as those reported by the majority of military surgeons, namely, with the exception of the chlorin preparations, all other antiseptic agents, in sufficient strength to be germicidal, hindered rather than helped in the control of suppuration and the process of repair.

The results reported from the use of Dakin's and later Daufresne's modifications of Labaraque's solution are now known to every student of surgical progress and accepted by all those who have had the privilege of personally observing the work. Yet there are certain objections to these chlorin-containing solutions which constitute real obstacles to their general use: 1. The solutions currently used must be made with extreme care, and, being very unstable, it is almost necessary to have them freshly made daily. 2. All of these chlorin solutions irritate the skin if they remain in contact with it for any length of time.

The phenomenon of skin irritation is a definite obstacle to the use of these preparations, and in the experience of two of the writers there have been a number of cases in which the skin irritation, or burn as it is called, has persisted for months after the wound has healed. The burning, itching and pain of these skin reactions are of such a degree that it has been necessary to find some means to prevent or at least minimize the phenomena. At Compiègne and LePan, Dakin, Carrel, Dehelley and Depage have evolved a technic which will minimize this annoying irritation if carried out in its minutest detail; and from our personal experience, the success or failure of the method depends entirely on the degree of perfection with which the details of this technic are mastered and carried out.

THE DAKIN-CARREL-DEHELLEY-DEPAGE TECHNIC

The Dakin-Carrel-Dehelley-Depage technic consists essentially in: 1. The constant protection of all portions of the skin exposed to the chlorin solutions, or to the dressings containing the solutions, with vaseline. This is usually applied on strips of sterile gauze. 2. The use of very weak solutions of the hypochlorites. Below 0.4 per cent. of nascent chlorin the clinical effect of these solutions is nil, while above 0.5 per cent. the irritating effect on the skin becomes serious. Therefore a concentration of 0.48 per cent. is usually employed. By weakening the solutions in order to avoid skin irritation other problems are developed, the most difficult of which is that of making effective such minute quantities of a relatively weak germicide as is contained in a 0.48 per cent. solution of hypochlorite. Keeping the entire wound surface constantly moistened and in contact with the solution would seem to offer the maximum germicidal effect that could be expected, but the ease and rapidity with which these antiseptic substances unite with the protein and other substances in the wound exudate results in their rapid disappearance, in from thirty minutes to an hour, so that it is necessary not only to have the wound surfaces constantly in contact with the weak solutions, but also to provide for a frequent renewal of the solutions. It is largely because of these reasons that in the technic of those who have obtained really satisfactory surgical results with weak hypochlorite solutions one sees such minute care exercised in complete and constant immersion of all the wound surfaces with frequent and regular renewal of the solution.

In the Dakin-Carrel-Dehelley-Depage technic a constant immersion of all the wound surfaces is maintained by a complicated hydraulic system. From a reservoir the solution is carried through a series of rubber tubes to every nook and cranny and fills the wound cavity just to the point of overflowing. By means of stopcocks the solution in the wound cavity is renewed at will, and without necessarily changing the whole dressing. The opening of a cock in the outlet tube from the reservoir flushes out the wound according to the principles of overflow, and leaves the cavity refilled with a fresh solution.

If all the conditions of the Dakin-Carrel-Dehelley-Depage technic are carried out in the minutest detail, our experience has shown that infected wounds in military, industrial and civil practice can be sterilized in a remarkably short time, and when it is mechanically possible, such sterilized wounds can be closed, and they will heal as one would expect a sterile one to do. While not minimizing the wonderful surgical opportunities such possibilities open up, for it would seem to us that it means the fulfilment of Lister's first vision of antisepsis, we do feel that this technic requires an unusual degree of painstaking care (not peculiar skill) on the part of the surgeon and the nurse, and it is not only time-consuming, but also demands unusual expense for both apparatus and dressings. The concrete expression of this is seen in the large personnel and generous budgets at Compiègne and LePan. When one realizes that this complicated technic has been devised primarily to avoid or minimize the skin irritation following the use of the hypochlorites, it certainly seems justifiable, and to us necessary, to search for another solution of the difficulty of skin irritation.

THE PROBLEM OF SKIN IRRITATION

From investigations made by one of us (Dakin) as to the mode of action of the various hypochlorite preparations used in the treatment of infected wounds, it appears that when hypochlorites react with proteins of any kind, one of the first reactions consists in the formation of substances containing the NCl-group. These products, which belong to the group of chloramins, possess marked bactericidal properties and are the active germicidal agents produced by the hypochlorites when they come in contact with the wound exudate.[1] These chloramins are nonirritating to animal cells, and this explains the absence of irritation in the wounds, where the irritating free chlorin of the hypochlorite has been changed into chloramins and other nonirritating protein derivatives.

It is quite simple to prepare these chloramins synthetically, and one of these substances in the form of a sodium salt of toluene-parasulphochloramin has been used quite extensively as a germicide and is now being sold under the trade name of chlorazene. This synthetic chloramin is nonirritating to the skin and wound surfaces, and can be used in aqueous solutions in a concentration of 2 per cent., which has approximately four times the germicidal value of the currently employed solutions of hypochlorites.

The desirability, however, of using strong concentrations of these germicides is clearly shown by the

1. Proc. Roy. Soc., 1916, B **89**, 232.

work of C. J. Martin and Miss Chick, on the laws governing disinfection. They have definitely shown that a very complete analogy exists between ordinary chemical reactions and the process of disinfection, one reagent being represented by the disinfectant and the other by the protoplasm of the bacterium. If the act of disinfection is thus regarded as a chemical reaction proceeding with definite velocity, the successful use of germicides will depend on the establishment of conditions such that will permit the reaction to be pushed as far as possible toward completion in any given period of time. Maintenance of the active mass of germicide will obviously favor the course of disinfection. We have already referred to the difficulties encountered in maintaining an effective mass of germicide in the wound in the use of hypochlorites — and this is true to a lesser degree with the synthetic chloramins — because of the ease with which these substances unite with proteins and other compounds in the wound exudate and so lose their activity. By the use of an aqueous solution of synthetic chloramin of 2 per cent., we felt that a definite advance had been made in having a nonirritating germicide whose mass was four times that of the hypochlorites; but there was no improvement in the problem of maintenance, for in aqueous solutions these synthetic chloramins also disappeared rapidly in the wound exudate and had to be renewed at least every two hours.

One obvious method of overcoming this objection of rapid disappearance of the antiseptic was to dissolve an excess of the substance in some medium which would not only contain the desired large concentrations but would also hold it over a long period of time, as in oil, so that the germicide would slowly diffuse into the surrounding medium and thus permit the use of a large mass of germicide which at the same time would act (be maintained) for a longer period of time than would be possible with aqueous solutions.

At present we have made use of a dichloramin, first prepared by Kastle, Keiser and Bradey,[2] and later by Chattaway,[3] the systematic name for which is toluene-parasulphondichloramin. We propose to give it the name dichloramin-T. As a solvent we have used eucalyptol chlorinated as described below with or without liquid paraffin, similarly chlorinated, to limit their decomposing action on the dichloramin-T.

The solutions are not permanent, especially in the presence of liquid petrolatum; but a 10 per cent. solution of dichloramin-T in eucalyptol may be kept in a colored bottle for at least one month with but 25 per cent. decomposition.

It may here be noted that these substances were first used by Dunham and one of us (Dakin) in experiments on nasal antisepsis which will be reported shortly.

We offer as a solution of the serious obstacle of skin irritation of the usual chlorin preparations a practically stable, nonirritating, synthetic double chloramin compound, toluene-parasulphondichloramin or dichloramin-T, this solution to be used in strengths varying from 5 to 10 per cent. (from twenty to forty times the mass of germicide ever present in the usable concentrations of hypochlorites) dissolved in a chlorinated oil in order that the germicide will be slowly liberated over a period of from eighteen to twenty-four hours instead of from thirty minutes to one hour, as with the hypochlorite solutions.

2. Amer. Chem. Jour., **18**, 491, 1896.
3. Journal of the Chemical Society, London, 87 (1); 145, 1905.

THE USE OF DICHLORAMIN-T

The technic of its application is simplicity itself, in contradistinction to that of Dakin, Carrel, Hehelley and Depage. After a careful surgical preparation of the wound at the primary dressing, and excision of all foci of infection and of devitalized tissues, the solution is applied on surface wounds with an atomizer in the form of a spray. In deep wounds the cavities are filled with the liquid. When dependent drainage exists because of the location of the wounds or when it has been purposely made, the lower opening is temporarily closed with gauze and then the cavity is filled with the oil, thus covering all the wound surfaces. The dependent drainage is then reestablished by removing the temporary gauze obstruction.

This privilege of dependent drainage cannot be practiced with the use of aqueous solutions and the Dakin-Carrel-Dehelley-Depage technic, in which the wound must act permanently as a basin to hold the weak solution. We feel that too much stress cannot be laid on this advantage.

We have found that it is necessary to apply the oil but once in twenty-four hours, and the wounds should be covered with only a few layers of gauze to avoid the absorption of the oil by the dressings.

The clinical phases of these problems have been developed at a special clinic organized at the Pennsylvania Hospital for the care of industrial accidents.

At first the Dakin-Carrel-Dehelly-Depage technic and the Dakin-Daufresne modified Labarraque's solution was used. The results in 160 completed cases treated during the first two months showed that the patients in this group, including wounds of the soft tissues, tendons, bones and joints, were discharged recovered in one third the time required by the average of the other hospitals of the city. The comparison was made by means of insurance statistics. For the last two months, the complicated and expensive Dakin-Carrel-Dehelley-Depage technic has been replaced by the routine use of daily dressings of first 5 per cent. and later 7.5 per cent of dichloramin-T in chlorinated eucalyptol and liquid petrolatum. In this last group of eighty-two completed cases the time required for healing was 16.3 per cent. less than in the former.

If we had only obtained as good results from this method as from the hypochlorites, the simplicity of the technic and the saving in dressing material, less than one third of the former amount being used, would have insured its replacing the former method.

PREPARATION OF DICHLORAMIN-T

The following details were worked out for Chattaway's method of preparation:

Chlorinated lime (from 350 to 400 gm.) of good quality is shaken with 2 liters of water on a shaker for half an hour, and then the mixture allowed to settle. The supernatant fluid is siphoned off and the remainder filtered.

Powdered toluene-parasulphonamid, 75 gm. (the crude product may be used), is then added to the whole of the hypochlorite solution and shaken till dissolved. The mixture is filtered, if necessary, placed in a large separating funnel, and acidified by the gradual addition of acetic acid (100 c.c). Chloroform (about 100 c.c.) is then added to extract the dichloramin, and the whole is well shaken. The chloroform layer is tapped off, dried over calcium chlorid, filtered, and allowed to evaporate in the air. The residue is powdered, and dried in vacuo. It is sufficiently pure for most purposes without recrystallization.

The sodium toluene-parasulphochloramin which is sold under the trade name of chlorazene may be used instead of the toluene-parasulphonamid.

A SECOND METHOD OF PREPARING DICHLORAMIN-T

Fifty gm. of para-toluenesulphonamid are dissolved in 500 c.c. of water, and 100 gm. of sodium acetate and 100 c.c. of chloroform are added. The container is immersed in cold water, and a rapid stream of chlorin is passed in until the mixture is saturated. The mixture is allowed to stand a few hours and, if the odor of chlorin disappears, more of the gas is passed in. If necessary, more chloroform can be added to dissolve the dichloramin. From this point the procedure is the same as in the preceding method.

PREPARATION OF CHLORINATED EUCALYPTOL

Eucalyptol (U. S. P.), not eucalyptus oil, must be used. Five hundred c.c. are treated with 15 gm. of potassium chlorate and 50 c.c. of concentrated hydrochloric acid. After twelve hours the oil is well washed with water and sodium carbonate solution. Dry sodium carbonate is added to the oil, and the mixture is allowed to stand twenty-four hours. It is then filtered and dried with a little calcium chlorid.

PREPARATION OF CHLORINATED PARAFFIN OIL

Five hundred c. c. of commercial liquid petrolatum are treated with 15 gm. of potassium chlorate and 50 c.c. of concentrated hydrochloric acid. The mixture is exposed to the light and allowed to stand over night. It is then put into a separatory funnel, and washed successively with water, sodium chlorid solution, and water. The opalescent oil is tapped off, a lump or two of calcium chlorid and 5 gm. of charcoal are added, and the oil is filtered with suction.

In order to determine the amount of liquid petrolatum which can be added to the eucalyptol solution of dichloramin-T, the following mixtures were made:

Solution 1: 1 part liquid petrolatum to 2 parts 15 per cent. eucalyptol solution.
Solution 2: 1 part liquid petrolatum to 1 part 15 per cent. eucalyptol solution.
Solution 3: 3 parts liquid petrolatum to 5 parts 15 per cent. eucalyptol solution.
Solution 4: 2 parts liquid petrolatum to 1 part 15 per cent. eucalyptol solution.

These solutions were placed in test tubes, stoppered tightly, and preserved in the refrigerator at about 0 C. All solutions became somewhat turbid as soon as the liquid petrolatum had been added, but in forty-eight hours there was no appreciable settling out in any case. After a week, however, the dichloramin-T had partially crystallized from Solutions 3 and 4. Solutions 1 and 2 were no more turbid than just after the addition of the liquid petrolatum, and none of the dichloramin-T had crystallized out.

This experiment seems to justify the conclusion that no more than an equal part of liquid petrolatum should be added to a 15 per cent. solution of dichloramin-T in eucalyptol when the solution is to be kept for any length of time, but when the mixture is to be used immediately, as much as two parts of liquid petrolatum to one of the 15 per cent. eucalyptol solution may be used.

We have used a solution made up of one part of liquid petrolatum and two parts of 15 per cent. solution of the dichloramin-T in eucalyptol. A larger proportion of the liquid petrolatum would make the mixture somewhat cheaper, but would have no other apparent advantage.

One sample of chlorinated eucalyptol and two samples of chlorinated liquid petrolatum, one of which was chlorinated in the sunlight and the other on a cloudy day, were analyzed for chlorin by Carius' method with the following results:

Chlorinated eucalyptol:
0.1044 gm. oil gave 0.0044 gm. AgCl = 1.04 per cent. Cl.
Liquid petrolatum chlorinated on a cloudy day:
0.0936 gm. oil gave 0.0052 gm. AgCl = 1.37 per cent. Cl.
Liquid petrolatum chlorinated in sunlight:
0.1510 gm. oil gave 0.0231 gm. AgCl = 3.78 per cent. Cl.

The amount of chlorin which the oils take up is not large, but the amount absorbed is equivalent to a very considerable portion of chlorin which would be available from a 10 per cent. solution of the dichloramin-T.

CONCLUSIONS

In comparing the practical surgical value of dichloramin-T with aqueous hypochlorite solutions in the treatment of infected wounds, which in spite of many serious objections has given such promising results, we believe that our laboratory and clinical findings thus far warrant the following statements:

1. Dichloramin-T is a nonirritating[4] synthetic germicide, and corresponds to the antiseptic chloramin substances found in minute quantities when nascent chlorin of the aqueous hypochlorite solutions is brought into contact with the exudate of suppurating wounds.

2. Dichloramin-T can be used in strengths of from twenty to forty times greater than is possible with the hypochlorites and in an oily solution which makes possible the slow elaboration of the germicide over a period of from eighteen to twenty-four hours instead of a rapid disappearance in from thirty minutes to one hour as with the hypochlorites.

3. Its use is as simple as the application of the tincture of iodin, and we can see no reason why it cannot be used to replace iodin as a primary dressing. In our experience it is just as effective as a germicide, and is without the destructive effect on the tissue cells. We have had the opportunity of using it in this way at the primary operation in seven wounds involving soft tissues, tendons, joints and bones and have not failed to have primary union. One case, a compound fracture of a metacarpal with severed extension tendons, did not receive treatment until three hours after the injury.

4. The chlorin in dichloramin-T, as in the hypochlorites, has the power of dissolving dead tissues. Hemorrhage, therefore, must be stopped by ligation, else the clot will dissolve and secondary hemorrhage may follow.

5. One should not depend on a chemical agent to perform, in the treatment of suppurating wounds, for that which can and should be done quickly and thoroughly by mechanical means. Neither chemistry nor bacteriology can or should be expected to replace the mechanics of surgery. At the best these chemical germicides can react only on the bacteria with which they actually come in contact, which means a very superficial process. Therefore, at the primary operation all infected tissue, foci and devitalized tissues must be removed when possible by surgical procedures. Finally, adequate drainage, dependent if indicated, must be provided.

4. We have seen two cases of skin irritation after several weeks of continuous use. It is similar to the eruption of ivy poison, and may be due to the eucalyptol.

The Needless Deaths of Peace.—Osler in speaking recently of the needless deaths of peace, stated that in 1915 "while nine of our soldiers abroad died every hour to save their country, twelve babies died at home in the same time." He said of syphilis that it is an easy first among the ten best killers; and of the gonococcus, that although it is not a great destroyer of life, it is the greatest known preventer of life. "With 30 to 40 per cent. of all cases of congenital blindness, with the chronic pelvic mischief in women, and with the unhappiness of sterile marriages, as a misery producer, the gonococcus is king among germs." He regards them as the most formidable enemies of the race, "entrenched behind the strongest of human passions and the deepest of social prejudices," but adds that the outlook is bright "as the public is being awakened, the state is intervening, and the changed heart of the people is allowing the sinner to get Christian treatment."

SODIUM SUCCINATE AND LEUKOCYTOSIS

EFFECT OF THE SUBCUTANEOUS ADMINISTRATION OF THE DRUG ON THE LEUKOCYTE CONTENT OF HUMAN BLOOD

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The literature dealing with the physiologic functions and reactions of succinic acid or its salts is far from justifying the possible significance that may be attributed to its constant and fairly widespread occurrence in animal tissues.

The work that has been done seems to give rise to the idea that succinic acid takes an important part in the oxidations in the tissues. Batelli and Stern[1] report on the relative oxidizing powers of various tissues with respect to succinic acid. Thunberg[2] shows that the oxidative processes in muscle tissue are markedly influenced by the presence of this compound, and from this Mathews[3] appropriately points out that the physiologic properties of succinic acid should be further investigated.

As an introduction to additional work on the subject, a study was made of the effect of the subcutaneous administration of sodium succinate on the leukocyte content of human blood from normal and pathologic persons.

The group of normal subjects was composed of four medical students apparently in good health. The other group was made up of nine persons suffering from phthisis. The majority of the latter patients had as a result of secondary infections a high original leukocyte count, and hence lent themselves nicely to a determination of whether or not the increase in leukocyte content observed in the normal subjects as the result of the administration of sodium succinate could be superinduced on that already present as the result of the pathologic condition.

TABLE 1.—EFFECT OF THE SUBCUTANEOUS ADMINISTRATION OF SODIUM SUCCINATE ON THE LEUKOCYTE CONTENT OF THE BLOOD OF NORMAL PERSONS

Subject	Normal Count		Count After First Dose		Count After Second Dose	
	Date	W. B. C.	Date	W. B. C.	Date	W. B. C.
A	2/ 2/17 2/ 5/17	6,550 6,800	2/ 6/17 2/ 8/17 2/ 9/17 2/14/17 2/21/17	9,600 9,160 9,200 9,200 7,200	2/28/17 3/ 2/17 3/ 9/17 3/14/17 3/16/17	9,350 10,800 7,750 8,500 7,200
B	11/27/16 11/29/16	8,000 7,800	12/12/16 12/14/16	11,800 10,732	1/ 3/17 1/ 5/17	13,150 11,200
C	3/ 1/17 3/ 6/17 3/ 7/17	7,320 7,300 7,000	3/14/17 3/16/17 3/23/17	10,000 9,200 7,750	3/28/17 3/30/17	8,650 8,600
D	9/12/16 9/14/16	8,520 8,480	9/19/16 9/20/16 9/22/16	10,860 11,120 9,850	9/26/16 9/28/16 10/ 4/16	11,400 10,400 8,700

The time for making the tests was so arranged that the possibility of error arising from physiologic leukocytosis was minimized. The leukocyte count normal for the individual was determined in all cases preliminary to the administration of the sodium succinate. Within two or three days the first dose of the drug was given in the form of 0.1 c.c. of a 1 per cent. solution subcutaneously. From four to six hours later the first test count was made, and in the majority of cases subsequent tests were made at intervals of two or three days until the leukocyte content of the blood had so far reverted toward the normal that the increase due to the drug was confirmed. Then a second administration of twice the quantity was made and the same procedure followed. No untoward reactions were observed as the result of this method of procedure.

TABLE 2.—EFFECT OF THE SUBCUTANEOUS ADMINISTRATION OF SODIUM SUCCINATE ON THE LEUKOCYTE CONTENT OF THE BLOOD OF PATHOLOGIC PERSONS

Subject	Normal Count		Count After First Dose		Count After Second Dose	
	Date	W. B. C.	Date	W. B. C.	Date	W. B. C.
A	7/19/16	15,400	7/24/16 7/26/16	13,942 14,132	7/31/16 8/ 2/16 8/ 8/16 8/11/16	14,960 16,840 15,750 13,120
B	7/16/16	11,200	7/21/16 7/26/16	15,460 11,950	8/ 7/16	13,750
C	7/17/16	20,200	7/21/16 7/26/16 7/28/16	24,600 25,480 21,480	8/ 1/16 8/ 3/16 8/ 8/16	25,460 18,760 17,640
D	7/17/16	5,450	7/21/16 7/26/16	6,800 8,260		
E	7/19/16	10,190	7/21/16	14,080		
F	7/17/16	10,150	7/24/16	9,860	7/28/16 7/31/16 8/ 2/16	8,640 9,300 9,200
G	7/17/16 7/19/16	14,000 14,800	7/24/16 7/26/16 8/ 2/16	18,400 16,800 14,040	8/ 8/16 8/11/16	16,280 13,760
H	7/17/16 7/19/16	11,680 12,460	7/24/16 7/26/16 7/31/16	12,800 13,560 12,880		
I	7/31/16	6,230	8/ 2/16	8,480		

In Table 1 will be found the figures representing the results of these experiments on the normal subjects. Table 2 contains the demonstration of the effect of this treatment on the leukocyte content of the blood in the pathologic cases.

From these tables it will be seen that in the normal subjects the subcutaneous administration of sodium succinate invariably produced an increase in the leukocyte content of the blood, ranging from 30 to 70 per cent., and that in the group of pathologic persons 66 per cent. showed an increase ranging from 20 to 40 per cent. There is apparently no relationship between the initial leukocyte count and the percentage of increase caused by the drug. It is evident that one of the physiologic reactions to sodium succinate is an increase in the cellular mechanism of defense for the organism. How much this is concerned with the body oxidation processes is a subject for further study.

CONCLUSIONS

The subcutaneous administration of sodium succinate in doses of 0.1 c.c. of a 1 per cent. solution causes an increase in the leukocyte content of the blood of both normal and pathologic persons.

1. Batelli, F., and Stern, L.: Compt. rend. Soc. de biol., 1910, **69**, 370, 554; Biochem. Ztschr., 1910, **30**, 172.
2. Thunberg: Skand. Arch. f. Physiol., 1911, **25**, 37.
3. Mathews, A. P.: Physiological Chemistry, Ed. 2, New York, 1916, p. 611.

THE INCIDENCE OF PHOSPHATIC URINARY CALCULI IN RATS FED ON EXPERIMENTAL RATIONS*

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During the early years of our investigations on the nutrition of rats a number of our experimental animals showed on necropsy the presence of calculi in the kidneys or bladder. These calculi ranged in number from one to a hundred or more, and in size from particles no larger than the head of a pin to large stones which filled the entire kidney, leaving only a thin wall of tissue surrounding the concretion. The number of such cases gradually diminished until during the last two years we have failed to find this condition among our rats. In view of these facts and the additional experience that none of our stock animals was ever found to be affected in this way, it became a matter of some interest to attempt to correlate, if possible, the appearance of these calculi with the diets on which the animals had been fed.

The foods which are furnished to the experimental rats here concerned have consisted of more or less isolated food materials mixed in proportions somewhat as in the accompanying tabulation:

PROPORTIONS OF FOOD MATERIAL

	Per Cent.
Protein	18
Starch	27
"Natural" or "artificial protein-free milk"[1]	28
Fats (either lard or butter fat, or both)	27

Such rations were calculated to supply the necessary energy in the form of suitable protein, carbohydrate and fat. The required inorganic nutrients were furnished by the "protein-free milk." When this was a "natural" product prepared directly from milk, it supplied the water-soluble vitamin now regarded as essential for adequate nutrition. In addition to this, a second dietary factor soluble in fats and furnished abundantly by butter fat, but not by lard, is at present believed to be required.

Inasmuch as nearly all of the proteins which have been employed in our experiments are represented among the rations of the affected animals, it is unlikely that the nature of the protein has been a determining factor in the production of calculi. The character of the carbohydrates and inorganic salts, the balance of acid-forming and base-forming foods, or a possible lack of water-soluble vitamins can also be eliminated as causes of the trouble; for the rats receiving the natural "protein-free milk" in their food were quite as subject to the disease as those receiving various artificial salt mixtures.

It is a striking fact that of the eighty-one cases of calculi which we have discovered in 857 necropsies, thirty-five (43 per cent.) of the rats had never received butter fat or any other source of the fat-soluble vitamin in their rations. Of the remaining forty-six cases, none of the animals had received food known to furnish such a vitamin during the entire course of the experiment; and only thirteen had this substance during more than one-half of the period in which they were on an experimental diet. When milk or butter fat was furnished at all in these instances, it was usually fed either for a short period at the beginning of the experiment, or as a means of realimenting a rat which had been depleted by feeding either a fat-free or a lard-containing diet. In four of the cases milk food was fed in alternation with a food deficient in one or more respects, for the purpose of keeping a stunted animal in good nutritive condition for a long time.[2] In all of these cases it is quite possible that the calculus formation started during the period when the animal had no milk or butter fat in the diet, and the subsequent addition of this factor was unable to prevent the development of the disease or lead to a solution of already formed calculi. In other words, *in every instance where calculi developed, the animals were without an adequate source of the fat-soluble vitamin for some time.* During the last few years our animals have, as a rule, been supplied with a liberal quantity of the fat-soluble vitamin throughout the entire period of their experimental feeding, which may account for the fact that none of them have developed calculi at any time.

According to a report of the Public Health Service on "The Rat and Its Relation to the Public Health," [3] "the bladder of rats very frequently contains very irregularly shaped, rough, somewhat branching concretions. These concretions are rather soft and tough and are dirty white in color." Well marked vesical calculi also have been reported. "In one case twenty-one smooth round stones which completely filled the bladder were found. The total weight of the stones was 3.8 grams. In another case six calculi were found, the total weight of which was 7.8 grams; the largest one weighing 5 grams. In a third case eight smooth, round stones weighing 1.7 grams were found, the largest of which weighed 0.6 gram. The last two cases were female rats; the sex of the first was not recorded. In each of these cases the bladder showed to the naked eye very marked evidence of inflammation. The mucous membrane was reddened, villous, and covered with tenacious mucus. In one case in which microscopical examination was made the mucous membrane was found to be covered with pus cells, the surface layers of which were undergoing degeneration."

The calculi observed in our experimental animals were, as already mentioned, of variable size, and distributed in various parts of the urinary tract. They were light in color and generally spherical in form. The total weight of concretions from a single rat sometimes exceeded 5 grams. The incidence of the calculi was about equal between the two sexes (39 females, 42 males).

Repeated chemical examination of specimens showed them to be characteristic phosphate calculi. An illustrative analysis of a kidney concretion weighing 1.5

* From the Laboratory of the Connecticut Agricultural Experiment Station and the Sheffield Laboratory of Physiological Chemistry in Yale University, New Haven. The expenses of this investigation were shared by the Connecticut Agricultural Experiment Station and the Carnegie Institution of Washington, D. C.

1. The descriptions of these products, which include all the essential inorganic ingredients of the diet, will be found in Carnegie Institution of Washington, Publication 156, Part II; Ztschr. f. physiol. Chem., 1912, **80**, 307; and Jour. Biol. Chem., 1913, **15**, 311. Sometimes these were replaced by a mixture of inorganic salts (Salt mixture I, Carnegie Institution of Washington, Publication 156, Part II, p. 80) to the amount of 2.5 per cent. together with lactose or sucrose.

2. Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1914, **18**, 95; Chart IV is a typical illustration of this method of stunting.

3. The Rat and Its Relation to the Public Health; U. S. P. H. and M.-H. S., 1910, p. 63.

grams, gave the following results: Loss on drying, =2 5.8 per cent. Composition of the dry residue: P = 8.9; Ca = 12.1; Mg = 2.6 per cent.

Some carbonate was present. Oxalates and uric acid were absent, but the stone contained a small amount of a mucus-like substance. These data correspond with what might be expected for a concretion consisting essentially of insoluble phosphates of calcium and magnesium.

According to the most likely current conception of the genesis of such calculi,[4] they may be assumed to arise because of changes in the composition of the urine brought about by infection and consequent ammoniacal decomposition. If it is asked what connection may be assumed to exist between the diet predisposing to the calculi and the possible infection of the urinary tract, we recall the inevitable nutritive failure, sooner or later, of all of our experimental animals which have not had an adequate supply of the fat-soluble vitamin. This outcome of a physiologically inappropriate diet may be associated with a general decrease in immunity to bacterial infection such as is exemplified by a form of infectious eye disease which is prevalent among animals inappropriately fed[5] and which is speedily alleviated by the introduction of butter fat,[6] cod liver oil,[7] and certain other animal fats[8] into the experimental rations.

We cannot offer any rigid proof of the etiologic relationship between the rations deficient in fat-soluble vitamin and the formation of phosphatic calculi. The impressive statistical fact that *in every case* where the calculi were observed the animal had existed for some time on a diet of the sort indicated, together with our failure to discover any other pathogenetic factor common to all the affected animals, makes the hypothesis suggested above worthy of serious consideration.

4. Compare Wells, H. G.: Chemical Pathology, 1914, p. 414.
5. Compare Knapp: Ztschr. f. exp. Path., 1908 **5**, 147.
6. Osborne and Mendel: Jour. Biol. Chem., 1914, **16**, 423.
7. Osborne and Mendel: Jour. Biol. Chem., 1914, **17**, 401.
8. Osborne and Mendel: Jour. Biol. Chem., 1915, **20**, 379.

The Bitter Tonics.—The bitter tonics are common "home remedies" and favorite "drug-counter prescriptions." They are given to convalescents who would continue to improve, tonic or no tonic, and the tonic not the recuperative power of the patient, gets the credit, or the physician prescribes a more hygienic living and a tonic. The health improves, and both physician and patient think the tonic did it. But even if the bitters have no direct action on gastric secretion and digestion, and no appreciable indirect action on the secretion of gastric juice, may they not be valuable aids in expelling worry and implanting hope and good cheer in the mind of the patient? May they not be an efficient handmaid to psychotherapy? There is no question that the bitter tonics connect up with the popular belief that the potency of a medicine is directly related to its strong (or bad) taste. And the readiness with which these tonics are dispensed nourishes the popular superstition that there is, or must be, a specific drug remedy for every ailment, a superstition that constitutes the chief aid of the medical quack and the "patent medicine" vender. The stimulation of certain nerve-endings in the mouth and in the normal gastric mucosa unquestionably contributes to the complex sensation of appetite, and these nerves are stimulated by condiments and flavors of food. Apart from this, *the physiologic way of augmenting hunger and appetite is moderation in the food intake or increasing the utilization of the food in the body by outdoor living, fresh air, cold baths, and physical work.* If these measures do not improve appetite and hunger, the chances are that the digestive tract is not in a condition to take care of the amount of food demanded by stronger hunger and appetite sensations.—The Control of Hunger in Health and Disease, A. J. Carlson.

A STUDY OF EXOPHTHALMIC GOITER FROM THE POINT OF VIEW OF THE BASAL METABOLISM

WITH REMARKS CONCERNING THE EFFECT OF VARIOUS FORMS OF TREATMENT *

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During the last two years and a half an investigation of the basal metabolism in thyrotoxicosis has been carried out at the Massachusetts General Hospital. It was our original intention to report these data fully in a more technical paper first, and subsequently to discuss the clinical aspects of the work in a general paper. Since it now seems probable that we shall be unable to publish our work in detail until after the war, and since certain conclusions have been drawn which we believe will be of interest to clinicians, we are submitting at present an outline of our work, together with a discussion of the results obtained.

The manifestations of overactivity of the thyroid gland are numerous. Besides the well recognized features, such as tachycardia, nervousness, loss of weight, and tendency to increased sweating, a rise in the general heat production, or, as it is now commonly called, the basal metabolism, practically always occurs. Moreover, while a rise may be likewise found in a few other pathologic conditions, it is less marked, and is found in conditions easily differentiated from hyperthyroidism. So it seems fair to say that a rise in the basal metabolism is not only a constant feature, but is one of the most striking and characteristic manifestations of thyroid overactivity. Important work on the basal metabolism in exophthalmic goiter has been reported by Du Bois,[1] and the literature on the subject is reviewed in his paper.

To judge accurately the intensity of the intoxication, a quantitative measurement of some sort becomes necessary. The pulse and weight of course can be measured quantitatively, but as we shall show below, a very false impression of the toxicity may be obtained from these alone. It was for this reason that we undertook an extended study of the basal metabolism in various types of toxic goiter.

For a discussion of the methods used the reader is referred to various previously published papers.[2] It will suffice to say here that the patient's heat production is determined by calculation from his gas exchange. The latter is determined by means of Benedict's respiration apparatus.[3] The method of calculation, called indirect calorimetry, is thoroughly discussed in the paper of Williams, Riche and Lusk.[4] By indirect calorimetry the number of calories produced can be calculated, provided the oxygen absorption and the carbon dioxid output are known.

To compare fairly the heat production of one individual with that of another, their lowest level of

* From the Medical Service of the Massachusetts General Hospital, aided in part by a grant from the Proctor Gift, Harvard University.

1. Du Bois, E. F.: Metabolism in Exophthalmic Goiter, Arch. Int. Med., June, 1916, p. 915.
2. See, for example:
Palmer, Means and Gamble: Jour. Biol. Chem., 1914, **14**, 239.
Means: Jour. Med. Research, 1915, **27**, 121.
Means: Boston Med. and Surg. Jour., 1916, **174**, 864.
3. Benedict: Deutsch. Arch. f. klin. Med., 1912, **107**, 160.
4. Williams, Riche and Lusk: Jour. Biol. Chem., 1912, **12**, 349.

metabolism should be used. Hence the term "basal metabolism." The determination of this is made by having the patient in a postabsorptive condition (fourteen hours or more after food) and at complete muscular rest, for both muscular work and food increase the metabolism.

Our procedure, then, has been to obtain the gas exchange of the quiet, fasting patient with the respiration apparatus, and from that to calculate his heat production in calories per hour. We then divide this by his body surface, for the heat production of normal individuals has been shown to be proportional to their areas. We obtain the surface area by Du Bois' formula from the height and weight.[5] This gives us the calories produced per square meter of body surface per hour. The basal heat production of normal individuals is very constant. It varies slightly with age and sex. A set of standards of the normal metabolism will be found in a paper by Aub and Du Bois.[6] In all the present work we have handled our data as follows: The basal calories per square meter per hour are divided by the appropriate normal standard for individuals of the patient's age and sex, and the percentage variation from the normal thus found. So in the following pages if the metabolism is said to be + 100 per cent. it would mean that it is twice the normal, and — 50 per cent. would mean one-half the normal.

At the present time we have made 224 observations of the basal metabolism in fifty-seven cases of true toxic goiter, and twenty observations in eighteen cases of nontoxic goiter. We have also made thirty-seven observations in thirty-two borderline cases, as well as about thirty-five single observations in control cases, normal and pathologic.[7] Each observation requires about three quarters of an hour's time for an observer and an assistant.

The first point which we wish to bring out is that the toxicity as judged clinically runs very nearly parallel with the rise in the metabolism. This is well shown in Chart 1, in which we have plotted the first observation in all our toxic and nontoxic goiter cases. The clinical impression as to the degree of toxicity is indicated by a series of plus signs, one sign meaning slightly toxic, two moderately toxic, and three very toxic. The average curve shows that in the clinically nontoxic cases there is essentially a normal metabolism; in the mildly toxic, an average rise of 43 per cent.; in the moderately toxic, an average rise of 53 per cent., and in the very toxic, an average rise of 76 per cent. The highest metabolism observed was + 118 per cent. It will also be seen in this chart that of all the patients who clinically had hyperthyroidism, all but one had a rise of more than 25 per cent., and of those cases that were clinically nontoxic goiter, only one, a questionable case, had a rise of more than 17 per cent. in the basal metabolism. The metabolism studies at the Russell Sage Institute seem to indicate that the normal metabolism varies within a range of plus or minus 10 per cent. from the average, and that any subject exhibiting a variation of more than 15 per cent. is distinctly abnormal. Our clinically toxic cases, then, with one exception, fall in the pathologic group from the metabolism point of view, and of the clinically nontoxic cases 80 per cent. fall within the normal zone.

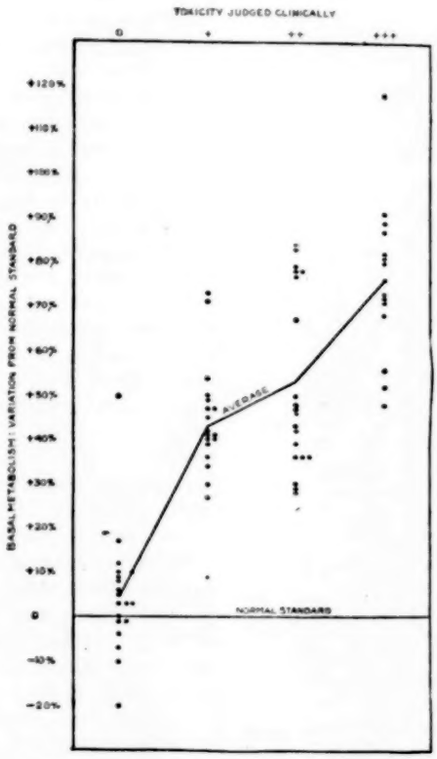

Chart 1.—First observations in all toxic and nontoxic goiter cases.

We believe that the corrollary of this relationship is that the rise in basal metabolism furnishes an accurate index of the degree of toxicity in hyperthyroidism, and that, in fact, it amounts to a functional test of the thyroid gland; and it is from this point of view that we have used it.

Our purpose, then, has been to observe as large a series of cases of thyrotoxicosis as possible, and over as long a period of time as possible, getting observations of the basal metabolism from time to time as a criterion for judging the severity and course of the disease and the effect of various methods of treatment.[8]

The chief therapeutic agents which have been studied are complete rest in bed, surgery, the Roentgen ray, and to a lesser extent, the effect of a few drugs. We have many observations on the first three, in cases of varying degrees of severity; and in a number of instances the observations extend over a period of a year or more. The effect of drugs has been studied in some cases in short periods, but nearly always in conjunction with rest, so that no very crucial test of the drug action has been carried out. It would be well to obtain extended observations on the effect of quinin hydrobromid, without other treatment, but we considered the effects of rest, surgery and the Roentgen ray more important and so studied them first.

EFFECT OF REST ALONE AND OF REST PLUS DRUGS

A large number of the patients whom we have followed have been, for a time at least, bed patients in the hospital. Some of these received no treatment except rest and forced feeding; others were given sedative drugs in addition. It was found that a large percentage of the cases, whether mild or severe, showed a very marked fall in the metabolism on rest alone, or on rest plus drugs, as also shown by Du Bois. This fall usually occurred over a period of from one to three weeks, when a level, or plateau, was

5. Du Bois, Delafield, and Du Bois, E. F.: A Formula to Estimate the Approximate Surface Area if Height and Weight Be Known, Arch. Int. Med., June, 1916, p. 862.

6. Aub, J. C., and Du Bois, E. F.: The Basal Metabolism of Old Men, Arch. Int. Med., May, 1917, p. 831.

7. This does not include observations already published.

8. We shall postpone the discussion of the results obtained in the borderline cases and the value of the metabolism determination for purposes of diagnosis until our complete work is reported. We might say here, however, that in cases in which it is uncertain whether any hyperthyroidism exists, a determination of the basal metabolism is undoubtedly of great importance.

reached. In Tables 1 and 2 we give data on two groups of cases, the first group being those in which we were able to observe the effect of complete rest alone, and the second group where, in addition to complete rest, the patients receive quinin hydrobromid in the usual dosage. The first observation in this table was secured after the patient had been in the ward for a few days, the second anywhere from one to three weeks later, the patient having had complete rest in bed in the interim.

Tables 1 and 2 show a drop of more than 20 per cent. in the basal metabolism in eleven out of sixteen cases treated by rest alone or by rest plus quinin hydrobromid, over a period varying between one and three weeks. The average drop in the cases treated by rest alone was 17 per cent., and of those who also received quinin hydrobromid was 19 per cent. In other words, the patients not receiving the drug showed practically as much reduction as those who did. Moreover, the series not receiving the quinin hydrobromid, as a group, were more toxic than those that did. Two cases, after the complete effect from rest had been obtained, showed no added effect from quinin hydrobromid. From these observations, then, we conclude that rest alone usually causes a decrease in thyrotoxicosis, as shown by the basal metabolism, and also that this decrease is not accelerated by giving quinin hydrobromid.

TABLE 1.—TOXIC GOITER: EFFECT OF COMPLETE REST ALONE

Case Number	Basal Metabolism: Percentage Variation from the Normal	
	First Observation	Second Observation (From 1 to 3 weeks later)
10	+68	+52
88	+73	+52
111	+87	+83
121	+109	+84
137	+71	+61
151	+79	+57
Average	+81	+67

We have made scattered observations on other drugs, such as veronal, paraldehyd, triple bromids, etc., and in no instance have we found any fall in metabolism which could not be explained as the result of rest.

EFFECT OF THE ROENTGEN RAY [9]

We have had an opportunity to study the effect of the Roentgen ray in exophthalmic goiter quite extensively. In Table 3 we have collected the data in all cases that we have been able to follow from the time before the patients had any treatment. Observations have been made on a number of others, chiefly to see whether they had had sufficient treatment. The irradiation was done at intervals of about three weeks, and each treatment was a maximal exposure; the thymus as well as the thyroid was exposed. Some of the patients had no treatment except the Roentgen ray, and continued at their normal occupations. This was true in Cases 12, 25, 33, 66, 107 and 120. Of these, Patient 12 after six, and Patient 107, after four treatments, showed no improvement; Patient 12 was a housewife with a long-standing toxic, nonexophthalmic goiter; Patient 107 a housewife with a return of toxicity following partial thyroidectomy several years before. Patient 33, a young man, showed a remarkable improvement after six treatments. He had absolutely no treatment but the Roentgen ray, and when last seen was following his trade, that of a barber, and serving on the jury at the same time. Patient 66, a young schoolmistress, showed a marked improvement in spite of the fact that she continued at her work, which involved teaching a roomful of small children daily. Patients 25 and 120 showed some improvement, but were not cured when last seen.

9. The Roentgen-ray treatments were given by Dr. A. F. Merrill, whom we wish to thank for his kind cooperation.

TABLE 2.—TOXIC GOITER: EFFECT OF REST PLUS QUININ HYDROBROMID

Case Number	Basal Metabolism: Percentage Variation from the Normal	
	First Observation	Second Observation (From 1 to 3 weeks later)
3	+80	+62
77	+48	+47
99	+72	+42
117	+45	+25
126	+47	+44
130	+46	+31
131	+42	+31
135	+39	+22
160	+78	+99
161	+84	+67
Average	+58	+47

Of those who had rest in addition to the Roentgen ray, Patients 10, 53, 93, 111, 121 and 123 showed either no improvement, or else no more improvement than might be explained on the basis of rest. Patient 21, a young woman with moderately severe exophthalmic goiter, showed no improvement with complete rest plus three Roentgen-ray treatments; but after the fourth, although she had resumed her normal life, she showed a marked improvement. Patient 48 probably was improved by the Roentgen ray, for although she had complete rest at the onset, on returning home and resuming her usual life (housewife) she continued to improve with prolonged irradiation. Patient 110, a social worker, with moderately severe exophthalmic goiter, showed a greater improvement than could be ascribed to rest alone, and after the fifth treatment had a normal metabolism with practically no symptoms, although she had resumed her work. Patient 113 also showed considerable improvement after her third treatment, although she had had no rest up to that time.

TABLE 3.—TOXIC GOITER: EFFECT OF ROENTGEN RAY

Case No.	Basal Metabolism: Percentage Variation From the Normal											
	Before Treatment	Number of Treatments										
		1	2	3	4	5	6	7	8	9	10	11
10	+68*	+52*	.....	.....	.....	.....	.....	.....	.....	.....	+88‡	
12	+49§	.....	.....	.....	.....	.....	+46§					
21	+50*	.....	+53*	+50*	.....	+13§						
25	+83*	.....	.....	.....	+61§	.....	.....	.....	+63§			
33	+78§	.....	.....	.....	+51‡	.....	+14§					
48	+82*	+61*	+61‡	.....	.....	.....	+54§	.....	.....	.....	.....	+26§
53	+48§	.....	.....	.....	.....	+57‡	.....	+60‡				
66	+42§	.....	.....	.....	+33§	.....	+13§	+28§				
93	+40‡	.....	.....	+37*	+38*	+37*						
107	+41§	.....	.....	+21§	+54§							
110	+42*	+25*	+34‡	+17‡	.....	−1§						
111	+83*	+57*	+87‡	.....	+85‡							
113	+77§	.....	+48§	.....	+39*							
120	+71‡	.....	+56§	.....	+48§							
121	+84*	+84*	+74*	+103†	+79†	+58*						
123	+74‡	+84*	+58*	.....	.....	+73§						

* Complete rest in hospital ward.
† Complete rest outside hospital.
‡ Partial rest outside hospital.
§ Leading usual life.

From these observations we conclude, first, that in certain cases, particularly the less severe ones, the Roentgen ray alone may cause a definite decrease in the metabolism, in fact, that it may be brought to normal; secondly, that in certain cases treated by rest plus the Roentgen ray there has been more improvement than can be accounted for by rest alone; and thirdly, that in other cases usually severe in type, there is not the slightest improvement, even though complete rest is combined with prolonged irradiation.

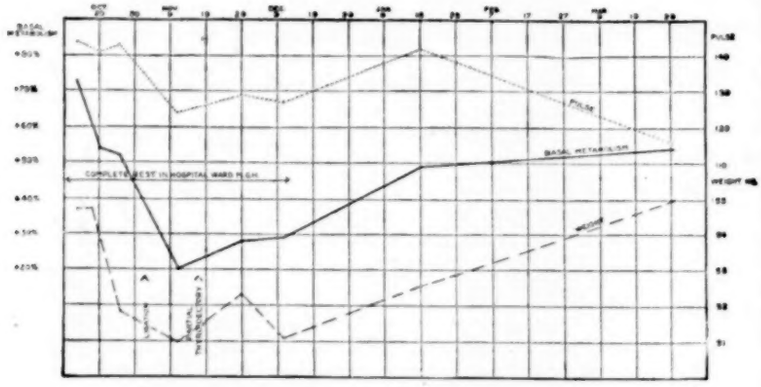

Chart 2.—Course in Case 88.

THE EFFECT OF SURGICAL PROCEDURES

Observations before and after partial thyroidectomy are shown in Table 4. In twelve cases observed just before and shortly after operation, a striking fall in the metabolism occurred in every one; also many of these patients had had prolonged rest in bed before operation, and had had the maximum drop from rest alone, had, in other words, reached a plateau before operation. In four of these, however, the metabolism subsequently rose again; in three cases the metabolism returned to normal and remained there. Some late results of operation are shown in Cases 3 and 16, both of which were still very toxic more than a year after operation. Cases 88 and 99 also showed a higher metabolism several months after operation than they did before. As to the effect of ligation of the thyroid arteries, we can say but little, having observations before and after this procedure in only two cases. In one of these the metabolism fell from + 52 to + 20 per cent., and in the other from + 50 to + 39 per cent., after ligation of the superior arteries. Du Bois, however, has made several observations on ligation, and found very little late effect.

Our series comprises observations on twenty patients treated surgically. Of these five died after operation. It is interesting to note that in three of these five, in whose cases more than one observation was secured previous to operation, the metabolism was rising, although the patient was having complete rest in bed at the time. The metabolism of all but two of the patients who recovered was either falling or level at the time the operation was done.

From these results we conclude, first, that the early effect of either ligation or partial thyroidectomy is usually a marked decrease in toxicity, as indicated by the fall in metabolism; second, that while this improvement sometimes is maintained, it also often is not, and some patients may become quite as toxic, or more toxic, than they were before they were operated on.

ILLUSTRATIVE CASES

We give the histories briefly, and show charts, of three cases which illustrate certain points:

CASE 88.—A year ago the eyes of an unmarried woman, aged 22, with unimportant family and past history began to be prominent, her neck became full, and the usual symptoms of exophthalmic goiter came on gradually and have been getting progressively more marked. She had done no work for a year and had had four Roentgen-ray treatments between July and October, 1916, without improvement. She entered the medical wards of the Massachusetts General Hospital, Oct. 11, 1916. Physical examination at that time revealed well marked eye signs, considerable soft symmetrical enlargement of the thyroid with a loud systolic bruit, fine tremor of tongue and fingers, and warm, moist hands. The heart was somewhat enlarged to the left, very rapid, and there was a systolic murmur heard over the entire precordium.

The subsequent course of the case can best be followed in Chart 2. On complete rest in bed without other treatment, the metabolism fell from + 73 per cent. to + 52 per cent.

November 2, the left superior thyroid artery was ligated by Dr. C. A. Porter under local anesthesia. Ten days afterward the metabolism was only + 20 per cent.

November 17, Dr. Porter did a partial thyroidectomy (right lobe) under gas and oxygen. The patient stood the operation well. Pathologic examination of the thyroid revealed a typical follicular hyperplasia. Following the second operation, the metabolism remained about level up to the time when the patient went home, being just below + 30 per cent.

TABLE 4.—TOXIC GOITER: EFFECT OF PARTIAL THYROIDECTOMY

Case No.	Basal Metabolism: Percentage Variation From the Normal				
	Few Days before Operation	1 to 2 Weeks after Operation	3 to 6 Weeks after Operation	2 to 7 Months after Operation	18 to 24 Months after Operation
3	+73	....	+62	....	+40
16	+30	....	....	....	+45
51	+40	....	+ 2	+19	
71	+40	+15	+36	+30	
83	+36	+39	+ 8		
88	+52	+28	+29	+54	
93	+37	+ 5	+ 4		
99	+42	....	+39	+46	
106	+50	+ 7	....	+ 5	
117	+41	+13	+27	+31	
121	+58	+15			
125	+50	+35	+34	+27	
126	+44	+14	+19	+39	
130	+22	....	....	+28	
137	+56	+34	+67		
143	+32	+19	+13		
151	+57	+35			

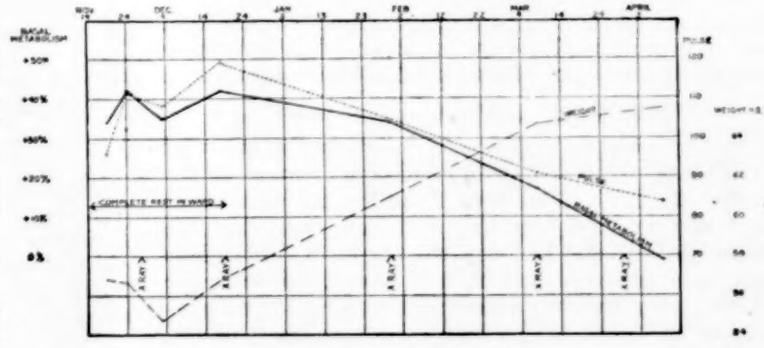

Chart 3.—Course in Case 110.

The important point that this case illustrates is the rise in the metabolism after the patient left the hospital. Although she felt well when seen in the middle of January and at the end of March, she still looked toxic, and it will be seen that her metabolism was rising. This, in our opinion, constitutes a definite indication for further treatment, either surgical or with the Roentgen ray.

We stated before that the weight and pulse were not the best indexes of toxicity, and this case indicates this point well. It will be seen, for example, that before operation, although the toxicity was decreasing, the patient was losing weight, while after the operation the reverse is true. Likewise, after the operation the pulse fell, though the toxicity as judged by the metabolism rose. In regard to the pulse, we think the discrepancies are due to the fact that tachycardia is not a pure sign of hyperthyroidism but is in part due to the actual condition of the myocardium. Hence, with myocardial damage, a tachycardia might continue without any thyrotoxicosis.

CASE 110.—An unmarried woman, aged 39, a graduate nurse, had had symptoms of hyperthyroidism for five months, but had kept at work during that time. Her chief symptoms were nervousness and intermittent pulse. She entered the hospital, Nov. 14, 1916. Physical examination showed slight eye signs, moderate soft, symmetrical enlargement of the thyroid with a systolic bruit, slight fine tremor of fingers and tongue, and warm, moist hands. The heart was normal.

This patient received no treatment but rest and the Roentgen ray. Her chart was an interesting one. A steady fall in basal metabolism and pulse and a gain in weight occurred during the course of treatment. At the time of the last observation she was back at work and yet had a normal metabolism. We doubt very much whether rest alone could accomplish any such result, and feel that it is just to credit the Roentgen ray with a considerable beneficial effect.

CASE 121.—An unmarried woman, aged 21, a domestic, had had symptoms for one year. All the typical symptoms of exophthalmic goiter had been present and had grown progressively worse, but she had not been obliged to give up her work.

She entered the hospital, Dec. 15, 1916. Physical examination at that time showed slight eye signs, moderate soft symmetrical enlargement of the thyroid with a loud systolic bruit, moderate tremor, and hot, moist hands. The heart was not enlarged, but showed a systolic murmur at the apex.

This case is interesting because there was a marked initial drop in metabolism on rest in bed; but after the plateau had been reached, prolonged rest and intensive Roentgen-ray treatment over a period of four months failed to accomplish any striking improvement.

April 16, however, Dr. Porter removed the right lobe and isthmus and a portion of the left lobe, under gas and oxygen, and although there was a marked reaction after the operation, in a few days the patient began to improve and at the last two observations the metabolism was only 15 per cent. above the normal. When last seen the patient presented only a very slight evidence of toxicity and wanted to return to work. We strongly advised her not to do so.

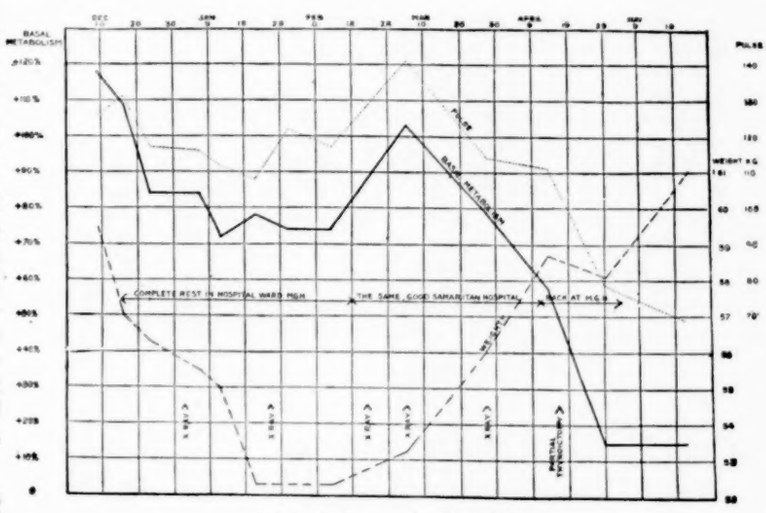

Chart 4.—Course in Case 121.

SUMMARY AND CONCLUSIONS

1. The general metabolism shows a characteristic increase in hyperthyroidism.

2. This rise may be used as a functional test of the thyroid activity or as an index of the intensity of the thyroid intoxication.

3. An extended study of the metabolism in various types of toxic goiter show that:

(*a*) Rest alone usually causes a marked decrease in toxicity.

(*b*) Drugs in addition to rest do not materially accelerate this decrease.

(*c*) The Roentegn ray, in some cases, produces a definite improvement, while in others it seems to be quite without effect.

(*d*) The usual immediate effect of surgery is a marked decrease in toxicity, but there is a very definite tendency toward a subsequent recurrence.

4. The lesson in therapeutics to be drawn from these results we believe to be about as follows:

(*a*) Complete rest in bed plus irradiation should be continued until the metabolism reaches a level.

(*b*) If rest and the Roentgen ray fail to restore the metabolism to within 20 per cent. of the normal, it is proper to resort to surgery, unless there is some definite contraindication. Among contraindications a rising metabolism, in spite of complete rest, seems to be very important.

(*c*) Following operation, if the metabolism again increases, further active treatment should be carried out. The observations in the cases that we have followed for a long time emphasize the importance of keeping cases of exophthalmic goiter under observation for months rather than weeks, and preferably years rather than months.

15 Chestnut Street.

Founder of Medical Reserve Corps of the Army.—Robert Maitland O'Reilly, surgeon-general during 1902-1909, created the Medical Reserve Corps of the Army for the expansion of its medical service in time of war, in which many distinguished physicians and surgeons of the country are now enrolled.—Lieut.-Col. C. C. McCulloch, Jr., U. S. Army: The Scientific and Administrative Achievement of the Medical Corps of the United States Army, *The Scientific Monthly.*

Clinical Notes, Suggestions, and New Instruments

WOUND DIPHTHERIA COMPLICATED BY RHEUMATIC FEVER

J. F. BICAK, M.D., NEW YORK

March 19, 1917, E. B., boy, aged 5 years, of German descent, was brought to my office with the history of a fall three weeks before, resulting in a wound of the ulnar side of the palm just below the wrist. This was said to have "healed up" and "opened again" one week before he was seen. He was pale and looked ill, but there was no elevation of temperature. The nose and throat did not show any acute lesion. Inspection of the hand revealed a wound 1½ inches long and from one-eighth to one-half inch wide, covered by a firm gray membrane. A culture revealed diphtheria bacilli. March 20, I called at his home and injected 5,000 units of antitoxin. The membrane disappeared from the wound in two days. March 27, the temperature rose to 103.6 F., and there were pains in both knees and the right ankle. The throat was reddened and next day the tonsils were covered with a loose exudate. A diagnosis of rheumatic fever was made. The temperature reached normal, March 31, when the patient was last seen. He still had a slight tenderness on pressure over the insertion of the left hamstrings.

On the day antitoxin was injected, a brother, C. B., aged 10 years, was found with a temperature of 103.5 F., evidence of inflammation of the mucous membrane of the nose, many punctate spots on the tonsils, and enlarged and very painful glands in the neck. Five thousand units of antitoxin were injected. A culture taken from the tonsils proved negative, but a diagnosis of diphtheria seemed safe. Recovery was prompt.

Another brother, G. B., aged 8 years, had excoriations at the edges of the nostrils, and evidence of inflammation of the mucous membrane of the nose. The mother stated his nose had been like that for a month. He received 1,000 units of antitoxin. The next day the temperature was 100.5 F. A culture was taken from the nose, and diphtheria bacilli found. Next day the temperature was normal and recovery good.

Two other boys were immunized.

631 East One Hundred and Sixty-Ninth Street.

AN UNCOMMON FRACTURE OF THE PELVIS

F. W. DUDLEY, M.D., MANILA, P. I.

A man, aged 42, while walking in his sleep, Nov. 27, 1913, fell from the upper story of his dwelling, a distance of about 12 feet. It would appear that the fall was partly broken by the hands and that the main force of the impact was received on the left side of the chest and over the left trochanter major. These deductions are made from the external marks of violence, the patient not knowing anything of the circumstances. He did not awaken as a result of the fall, being still asleep when found.

On examination, no fractures were discovered. Palpation of the left leg, thigh and hip was negative. There was no shortening, eversion, inversion or other deformity. The patient, however, was unable to extend the leg on the thigh, and when this was passively done, a slight vibration (not a crepitation) was transmitted to the hand held over the thigh. This gave the impression as if the head of the bone were sliding out of the socket and returning with a jump, such as is experienced in contortionists with lax ligimentum teres and joint capsule. The patient felt this also but experienced practically no pain.

Roentgenoscopy revealed a fracture beginning just beneath the anterior inferior spine of the ilium and extending downward and inward on about the line of union between the ilium and ischium, passing through the acetabulum and continuing on through the body of the ischium, completely separating the os innominatum into two parts. There was considerable separation of the fragments at the beginning of the fracture line. Another fracture was noted in the ischium, a serrated fracture line extending transversely through the ramus of the bone.

The cause of the fracture was the blow transmitted from the great trochanter through the neck to the head of the femur. The rule is for the neck to give way.

The patient was treated in a Bradford frame with a lateral splint extending from under the arm to beyond the sole of the foot, with a cross piece, buckle straps and swathe being used to retain it in place. The frame was supported on an ordinary bed with mattress removed. Two cross pieces of heavy timber were placed across the bed, one at the head and the other at the foot, to receive the frame. Two planks, placed on this, outside the frame, served as a convenience for attending to the patient's wants.

Passive movement was begun on the tenth day, and the patient was allowed up on the forty-second day.

There was no shortening of the limb, no pain on movement, and the patient has complete use of the leg, the anatomic and functional results being perfect.

One year after the accident the patient was able to spend the entire day wading through rice paddies, shooting snipe, without pain or abnormal fatigue.

SIMPLIFIED TECHNIC FOR LOCAL ANESTHESIA OF TONSILS

W. T. PATTON, PH.C., M.D., NEW ORLEANS
Fellow of the American College of Surgeons

Some textbooks in describing injection of the tonsils for local anesthesia show six or seven points at which we are told to inject. Others use a curved needle and inject just under the mucous membrane. Both of these methods cause an edema of the tissue, causing so much distortion that often it is hard to find the tonsil, and after operation there is bound to be more or less reaction from the introduction of so much fluid into the tissues. Again, our anesthesia is often poor and unsatisfactory.

The middle and posterior palatine nerves (branches of Meckel's ganglion) join with the tonsillar branches of the glossopharyngeal nerve to form a plexus around the tonsils (circulus tonsillaris).

With the exception of the mesial free surface, the tonsil is surrounded by a distinct fibrous capsule, and external to this capsule is found the pharyngeal aponeurosis, which is rather loosely associated with the capsule. External to this is the superior constrictor muscle of the pharynx.

The circulus tonsillaris forms around the capsule in the loose pharyngeal aponeurosis, and then sends small branches into the tonsil proper, both anterior and posterior pillars.

First it is necessary to diminish the pharyngeal reflexes, by either spraying or swabbing the oropharynx with a 10 per cent. solution of cocain, the swabbing being a much safer method. Applications are made at two minute intervals, until the reflexes are under control and the patient does not gag easily. Two or three applications are usually sufficient, though some patients may need six or more. In nervous persons it is wise to give a hypodermic injection of one-fourth grain of morphin ten minutes before the patient comes to the operating room.

After the reflexes have been brought under control, the anesthetic fluid is injected. Novocain solution, 1 per cent., with 15 minims of epinephrin solution, 1:1,000, to one-half ounce of the novocain solution, is the most satisfactory anesthetic. Schleich's solution No. 1, with 15 minims of epinephrin solution works well. Instead of a small sharp needle or one of the hooked tonsil needles, a medium size, fairly blunt, short pointed, ordinary spinal puncture needle should be used. The needle is inserted through the center of the tonsil outward and backward, with the idea of placing the point of the needle as near as possible between the capsule and aponeurosis at its exact center, which procedure is easy. The needle is shoved through the nonresisting tonsil tissue until a slight resistance is felt, which is the fibrous capsule,

and then just a fraction farther. Now from 15 to 20 minims of the novocain solution are injected. The solution infiltrates all around the capsule, and there is no edema or swelling. After several minutes, the tonsil can be removed by any method desired, with perfect anesthesia and little hemorrhage.

It is remarkable how easy one may anesthetize the tonsil in this way, with a small quantity of solution and only one puncture. If the tonsil is large or long, it is best to make two punctures, one through the upper pole and one through the lower pole.

I have removed over thirty tonsils by this method of anesthesia, and have had excellent anesthesia in all.

The advantages are:

1. Excellent anesthesia.
2. Small amount of fluid injected into the tissues.
3. Lack of edema and disturbance of the tissues.
4. Lack of postoperative reaction.

1109 Maison Blanche Building.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

HAY FEVER POLLENIN SPRING-MULFORD.—A liquid obtained by extracting the proteins of the pollen of rye (*Secale cereale*), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), and red top grass (*Agrostis alba*), and standardizing the solution by estimating the amount of protein contained in it. Preserved with three cresols.

Actions and Uses.—See New and Nonofficial Remedies, 1917, p. 242, under general article on Pollen Extract.

Dosage.—See New and Nonofficial Remedies, 1917, p. 242, under general article on Pollen Extract. Each package of Hay Fever Pollenin Spring-Mulford bears an expiration date (four months from date of removal from laboratory).

Manufactured by the H. K. Mulford Company, Philadelphia. No U. S. patent or trademark.

Hay Fever Pollenin Spring-Mulford, Four Syringe Package.—The syringes contain respectively 0.0025 mg., 0.005 mg., 0.01 mg. and 0.02 mg. of pollen protein.

Hay Fever Pollenin Spring-Mulford, One Syringe Package.—Each syringe contains 0.02 mg. of pollen protein.

Equal parts of the pollen of rye (*Secale cercale*), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), and red top grass (*Agrostis alba*) after being dried are ground in a ball-mill to destroy the cell membrane. This is then extracted with physiological sodium chloride solution. The extract is precipitated with acetone. The precipitate is dried and finally extracted again with physiological sodium chloride solution. The soluble proteins being brought into solution, a nitrogen determination is made on this extract, and it is then standardized according to the protein (nitrogen) content.

HAY FEVER POLLENIN FALL-MULFORD.—A liquid obtained by extracting the proteins of the pollen of ragweed (*Ambrosia artemisiaefolia*), golden rod (*Solidago*) and maize (*Zea Mays*), and standardizing the solution by estimating the amount of protein contained in it. Preserved with three cresols.

Action and Uses.—See New and Nonofficial Remedies, 1917, p. 242, under general article on Pollen Extract.

Dosage.—See New and Nonofficial Remedies, 1917, p. 242, under general article on Pollen Extract. Each package of Hay Fever Pollenin Fall-Mulford bears an expiration date (four months from date of removal from laboratory).

Manufactured by the H. K. Mulford Company, Philadelphia. No U. S. patent or trademark.

Hay Fever Pollenin Fall-Mulford, Four Syringe Package.—The syringes contain respectively 0.0025 mg., 0.005 mg., 0.01 mg. and 0.02 mg. of pollen protein.

Hay Fever Pollenin Fall-Mulford, One Syringe Package.—Each syringe contains 0.02 mg. of pollen protein.

A mixture of 90 parts of the pollen of ragweed, 5 parts of the pollen of various species of golden rod and 5 parts of the pollen of maize after being dried is ground in a ball-mill to destroy the cell membrane. It is then extracted with physiological sodium chloride solution. This extract is precipitated with acetone. The precipitate is dried and finally extracted again with physiological sodium chloride solution. The soluble proteins being brought into solution, a nitrogen determination is made on this extract, and it is then standardized according to the protein (nitrogen) content.

BORCHERDT'S MALT OLIVE.—A liquid stated to be composed of olive oil 20 per cent., glycerin 10 per cent. and Borcherdt's Malt Extract Plain 70 per cent.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by the Borcherdt Malt Extract Co., Chicago.

CITRESIA.—Magnesium Acid Citrate.—$MgHC_6H_5O_7.5H_2O$.—The hydrated acid magnesium salt of citric acid containing not less than 98 per cent. of $MgHC_6H_5O_7.5H_2O$.

Actions and Uses.—Citresia has the laxative and purgative action of magnesium citrate.

Dosage.—As a laxative 25 Gm. (6 drachms); as a purgative 50 Gm. (1½ ounce). It may be administered by dissolving citresia 25 Gm. in syrup of citric acid 25 Cc. and water enough to make 150 Cc.

Manufactured by Horace North, New York. No U. S. patent or trademark.

Citresia is a white or faintly yellowish-white, crystalline, odorless powder having an acid taste.

Citresia is very soluble in water; insoluble in alcohol, ether or chloroform.

Five Gm. of citresia should dissolve without residue in 25 Cc. of water.

If to 10 Cc. of an aqueous solution of citresia (1 in 20) 1 Cc. of hydrochloric acid and 1 Cc. of sodium phosphate solution be added and the solution be made slightly alkaline with ammonia water, a white, crystalline precipitate should be produced.

If 10 Cc. of the aqueous solution of citresia (1 in 20) be neutralized with potassium hydroxide solution and 1 Cc. of calcium chloride solution added, no precipitate should be produced. After boiling the mixture for one or two minutes, a white, crystalline precipitate should appear.

If 5 Gm. of citresia be shaken with 25 Cc. of alcohol, the mixture filtered, the filtrate evaporated, the residue, if any, dried for one hour at 100 C., and weighed, the weight found should not amount to more than 0.05 Gm. (limit of *citric acid, and some other impurities*).

If from 0.5 Gm. to 0.8 Gm. of citresia be weighed, and the salt dried to constant weight at 75 C., the loss should not amount to more than 30 per cent. (absence of an *undue amount of water*).

If from 0.5 Gm. to 0.8 Gm. of citresia be weighed, the salt ignited and the residue weighed, the ash should amount to not less than 13 per cent.

If from 2 Gm. to 3 Gm. of citresia be weighed, the salt dissolved in 25 Cc. of water and the cold solution titrated with normal potassium hydroxide, using phenolphthalein as indicator, the alkali required should correspond to at least 98 per cent. of hydrated magnesium acid citrate.

1 Cc. of normal potassium hydroxide volumetric solution = 0.30445 Gm. of $MgHC_6H_5O_7.5H_2O$.

If from 0.5 Gm. to 0.8 Gm. of citresia be weighed, the salt dissolved in 50 Cc. of 1 per cent. hydrochloric acid, a slight excess each of sodium phosphate solution and ammonia water added, the mixture allowed to stand 15 hours, the precipitate collected in a weighed Gooch crucible, washed, dried, heated and weighed in the usual way, the weight of magnesium pyrophosphate should correspond to not less than 98 per cent. of hydrated magnesium acid citrate ($MgHC_6H_5O_7.5H_2O$).

$$Mg_2P_2O_7 \times 2.734 = MgHC_6H_5O_7.5H_2O.$$

ANTIRABIC VACCINE (See N. N. R., 1917, p. 291).

Eli Lilly and Company, Indianapolis, Ind.

Pasteur Antirabic Preventive Treatment (Harris Modification).—Brains and spinal cords of rabbits, dead of fixed virus rabies infection, are ground to a paste which is frozen by the addition of carbon dioxide snow. The mass is pulverized and rapidly dried in vacuo. The resulting dry powder is standardized by the method devised by Dr. Harris, and stored in vacuo in the cold. One dose is given daily over a period of 14 days, the early doses increasing in unitage up to a maximum. Supplied in emulsion in syringe ready for use. The first three doses are sent out from distributing stations, the remaining ones from the home office.

Test for Picric Acid in the Urine.—F. Arena acidifies the suspected urine with a few drops of concentrated sulphuric acid and then places in the urine some wool cleared of fat. Any picric acid present fastens on the wool in the course of a few hours. The wool is then treated with a few cubic centimeters of hot concentrated ammonia. To this are then added 1 or 2 c.c. of a 2 per cent. solution of ferric citrate, not allowing the two fluids to mix. With positive findings, at the zone of contact a bright red ring forms, due to formation of picraminic acid.—*Riforma Medica*, p. 441.

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SATURDAY, JULY 7, 1917

IS EPINEPHRIN INDISPENSABLE FOR THE ORGANISM?

The physiologic potency of epinephrin has given it a widespread prominence alike in physiology, pharmacology, pathology and therapy. Any one who has witnessed the intense blood pressure raising effects of almost vanishingly small quantities of suprarenal extract or of the isolated epinephrin cannot fail to be impressed by such striking manifestations on the part of a biologic product. The diversity of the responses which can be produced serves to augment still more the interest in the active principle of the suprarenal structures. The local styptic power, so invaluable in diminishing inflammation and reducing hemorrhages; the relaxation of the muscles of the bronchioles, now familiar in the management of asthma; the profound effects on all structures innervated by the sympathetic nervous system; the production of hyperglycemia and glycosuria following administration of epinephrin, and its consequent relation to liver function—these are some of the familiar phenomena that have been demonstrated repeatedly or are already familiar in the routine of practice.

Lately this interest in epinephrin has been heightened by the widely discussed associations of the suprarenal bodies and certain mental states. These glands are asserted to participate in the emotions in a remarkable way. For example, during anger or fright, in some species, at any rate, something having the properties of epinephrin appears to be discharged into the blood in more than usual amounts. This is assumed to promote precisely those responses and prepare those conditions that favor a suitable performance on the part of the organism under the emergency that provokes the liberation of the hormone.

These observations are of the greatest interest as indications of a remarkable association of the glands with the emotions. But as Mathews[1] has significantly remarked, it must not be incorrectly inferred that the emotion of fright depends on the suprarenal glands, or that the manifestation of this emotion necessarily so depends. The fact is probably quite otherwise. The central nervous system is responsible both for emotion and for the stimulation of the sympathetic system; only the sympathetic stimulates the suprarenals to secrete epinephrin, which in its turn makes the sympathetic innervation more efficacious. It is like a process of autocatalysis, the sympathetic system, as it is stimulated, automatically raising the efficacy of its own stimulation.

Despite these diverse interesting facts that are known about epinephrin, it must not be concluded that the liberation of this compound represents the sum total of the functions of the suprarenal bodies. Extirpation of these structures invariably results in death; but the symptoms which precede it are scarcely ameliorated, nor has the fatal outcome been prevented by the injection of epinephrin.

Stewart and Rogoff[2] have shown that after section of the nerve supply of the suprarenals in animals there was no demonstrable liberation of epinephrin into the circulation, for some weeks at least, after the operation. It is highly probable, therefore, that the entire secretion of this hormone from the glands is controlled by the nervous system. Furthermore, in a series of new experiments in which one suprarenal was excised and the nerves of the other severed, the animals recovered completely from the operation and behaved in every way like normal animals. It must be concluded, therefore, that the liberation of epinephrin from the suprarenals is not indispensable for life or health, unless, indeed, the necessary quantity, even in the suprarenal vein blood, is below the limits of detection by the methods used. The real cause of death after loss of the suprarenals remains to be elucidated, nor is there yet any adequate explanation of the pigmentation of the skin in Addison's disease.

1. Mathews, A. P.: Physiological Chemistry, 1915, p. 672.

2. Stewart, G. N., and Rogoff, J. M.: Quantitative Experiments on the Liberation of Epinephrin from the Adrenals after Section of Their Nerves, with Special Reference to the Question Whether Epinephrin is Indispensable for the Organism, Proc. Soc. Exper. Biol. and Med., 1917, **14**, 145; Jour. Pharmacol. and Exper. Therap., 1916, **8**, 479.

THE ANTINEURITIC PROPERTIES OF MILK

"It is well to be on the right side of facts, for they are stubborn things and insist on being respected." This dictum deserves to be reiterated with strong emphasis at a time when shortage of food is confronting millions of people and when the possibilities of specific deficiencies in food products and the introduction of "devitalized" foods as a result of current methods of food manipulation are being widely discussed. In urging young men to "first get the facts," the secretary of commerce has said:

> The relation men hold to truth, their respect for facts, their use of facts, largely determines their place and power in life. We make progress in the business world not necessarily by research for facts but at least by outreach for them and by respectful treatment of them when they are found. The amount of success will depend a good deal upon how far your vision goes in seeing the facts that surround you and on the

extent to which your practice goes in using those facts. The man of broad mind sees more facts than he who has a narrower vision. Mental nearsight is usually not profitable. To be farsighted is at times physically inconvenient but commercially has much in its favor. It is more essential, however, that the sight, whether it be far or near, shall know a fact when it sees it and be ready to abandon a pseudo fact for a real one and to abide by the latter till further facts are found.[1]

Despite the excellent nutritive properties which have been accredited to milk almost from time immemorial, science is tending to limit unbounded enthusiasm for this universal food. We have already referred to the apparently well founded assertion that the milk of mothers suffering from beriberi is not an adequate nutrient for their young.[2] The observation that deficiencies in the form of a lack of essential components as well as positively damaging substances can be thus transmitted is what deserves notice in this regard. If this is well substantiated,[3] milk may become an actual menace at times when it is produced under physiologically unsatisfactory conditions or is subsequently deteriorated in commerce. Aside from possible inherent nutrient defects in milk as it is produced by the mammary glands, the problem of heating it, we still venture to assert, is far from solved. One needs only to read the conflicting claims as to the production of infantile scurvy by the use of pasteurized milk for infants, and the reports of the appearance of typical scorbutic symptoms in certain animals fed on raw as well as on heated milks, to wonder whether it is not timely to divorce fact and hypothesis completely in this matter in order to bring the subject out of its present chaos.

In addition to its reputed antiscorbutic virtues, in some species at least, fresh milk is reported to manifest antineuritic properties which give it a protective value against the encroaches of beriberi. An intimate relation between scurvy and beriberi has often been postulated of late. Symptoms intermediate between the two well characterized affections have also been described. For the purposes of the present discussion it will be advisable to avoid all conflicting claims by disregarding, for the moment, the possible antiscorbutic features of milk or its value as a possible stimulant to growth, and by concentrating attention on its relation to the prevention of neuritic manifestations which arise from the employment of diets which are somehow deficient.

The antineuritic properties of milk have not been thoroughly investigated. Accordingly, at the College of Medicine and Surgery in the University of the Philippines, Gibson and Concepción[4] have attempted to ascertain by feeding experiments whether or not antineuritic substances are present in milk and to what extent they may be affected by autoclaving the milk for two hours at 125 C. The outcome offers practical suggestions quite apart from the theory of etiology which may be held. The experiments at Manila indicate that the antineuritic property is present in milk in only slight amounts, and that the continued feeding of either fresh milk or autoclaved milk to animals (dogs and pigs) without suitable additions to the diet induces certain beriberi symptoms: degeneration of the peripheral nerves, persistent edema, and aphonia. There is no evidence, Gibson and Concepción state, that autoclaving the milk for two hours has in any way affected its nutritive value.[5] Not even scorbutic symptoms have been observed. If we may tentatively accept the evidence of the Manila investigators, the antineuritic powers of milk are so slight that in infant feeding the diet should be extended as soon as possible. We may entertain, without accepting, their further suggestion that the young of healthy mothers probably come into the world with a reserve supply of vitamin substances sufficient to tide them over in a nutritive way until the time when, under natural conditions of life, they would begin to eat other foodstuffs.

1. Redfield, W. C.: First Get the Facts, Science, 1915, **42**, 39.
2. Infantile Beriberi, editorial, THE JOURNAL A. M. A., Nov. 30, 1912, p. 1977.
3. The Relation of the Mother to Some Dietary Factors in Milk, editorial, THE JOURNAL A. M. A., March 10, 1917, p. 782; A Restricted Diet, April 21, 1917, p. 1184.
4. Gibson, R. B., and Concepción, I.: The Influence of Fresh and Autoclaved Cow's Milk on the Development of Neuritis in Animals, Philippine Jour. Sc. (B) Trop. Med., 1916, **11**, 119.

ANTITOXIN FOR GAS GANGRENE

The gas-producing bacilli, now commonly spoken of as *B. welchii*, occur in a variety of lesions, but their chief hold on our interest lies in their connection with gas gangrene, that dreadful complication of wounds, especially those received in modern warfare. The effects of gas bacilli have been explained in various ways, most often as due to some form of intoxication, either from the products of the decomposition of infected tissues or through the generation of fatty acids as well as in other ways, but it has not been thought that the effects were dependent on true bacterial toxins. Bull and Pritchett,[6] however, report highly interesting experiments, the results of which indicate that, under suitable conditions, cultures of gas bacilli produce true toxins to which their pathogenic effects, at least in certain animals, may be ascribed. There are produced at least two distinct toxins, one of which is hemolytic while the other causes local edema and necrosis and probably also a more general toxic action.

The destructive action on blood was shown most definitely by the intravenous injection of Berkefeld filtrates of cultures of gas bacilli in plain broth, to which sterile pigeon or rabbit muscle had been added; and the local destructive effects were produced best by subcutaneous and intramuscular injections of such

5. It may not be amiss to refer to some of the confusion on this subject, due to conflicting evidence. Lane-Claypon, Janet: Jour. Hyg., 1909, **9**, 233. Daniels, Amy L., and Stuessy, Sylvia: The Nutritive Value of Boiled Milk, Am. Jour. Dis. Child., January, 1916, p. 45.
6. Bull and Pritchett: Jour. Exper. Med., 1917, **26**, 119.

filtrates. Indeed, the lesions in the breast muscles of the pigeon, produced by injection of the filtrates, resembled closely the effects caused in animals and in human beings by actual infection with the bacilli. These actions of filtrates of gas bacilli cannot be neutralized with sodium hydroxid, and hence are not caused by butyric and other acids; they are materially reduced by heating filtrates to 62 C., and are completely removed at 70 C. for thirty minutes. Repeated injections of filtrates in pigeons and rabbits result in a true active immunity, and the blood of immunized rabbits neutralizes the toxic actions of the filtrate not only in the test tube, so far as the hemolytic action is concerned, but also in the living animal with respect to the locally injurious actions as well as the destruction of blood corpuscles, and it is still more significant that in pigeons such antitoxic serum proved to be protective and curative against actual infection with gas bacilli, both in the spore and in the vegetative stages. Bull and Pritchett also find that antitoxic rabbit blood and toxic filtrates of gas bacilli neutralize each other perfectly in multiples of single doses, thus fulfilling the law of multiple proportions as established with reference to the toxins and antitoxin of *B. diphtheriae* and *B. tetani*.

It appears, then, that gas bacilli may produce true toxins, which cause the principal pathogenic effects seen in gas infections and which can be neutralized by antitoxin, the latter being also protective and curative against gas bacillus infection in pigeons — a discovery that would seem to hold out great promise for the development of a specific treatment of human infection with gas bacilli.

THE CARE OF THE NEW-BORN

The first days of life are attended by a loss of body weight which is ordinarily regarded as a "natural consequence." The extent of decline, which ceases as a rule after the third day, averages from 150 to 200 gm., though the figures for the individual are highly variable. Whether or not an attempt should be made to combat this loss of weight has been debated. On the one hand, it is maintained that the intake of enough food to avert the loss should not be attempted until the newly born organism can grow up, so to speak, to the capacity of digesting and assimilating added nutriment; others find no occasion to delay prompt gains in weight so long.

An examination of the precise reasons for the usual early loss of weight may help to furnish enlightenment in the questions under dispute. The essential facts are assuredly not new; Talbot[1] has recently thus summarized them: The loss of weight is of two kinds: (1) "mechanical" and (2) "physiologic." The mechanical loss represents material which may be collected and weighed, and is due principally to the passage of urine and meconium, and at times to the vomiting of allantoic fluid, swallowed by the infant before birth. There is also a loss due to the evaporation of water from the skin. The physiologic loss of weight is that due to the actual oxidation of body substance as a result of metabolism, and to the fact that an infant is virtually starved during the colostrum period. The colostrum which an infant receives does not give enough food to supply the necessary energy to keep it warm.

Talbot has summarized the best quantitative data available with respect to human colostrum. The mother's breasts at birth contain only a small quantity of colostrum, which is increased under the stimulation of sucking, until the breast milk "comes in," on about the third or fourth day after birth. The amount of colostrum during the first twenty-four hours after birth is between 4 and 6 c.c., and gives approximately 3¼ calories. During the second day the baby receives from 78 to 129 c.c. of colostrum, or from 51 to 84 calories. On the third day the amount of colostrum varies between 199 and 238 c.c., which give from 129 to 154 calories. Colostrum, therefore, gives the newborn infant only a minimal amount of energy, insufficient to supply its energy requirements. It is quite natural that it should lose weight during the colostrum period.

From Talbot's standpoint, which seems to be the rational outcome of physiologic considerations, the question of early additional feeding centers in the nutritive condition of each child at birth. The fat, he remarks, which was deposited during the last month of intra-uterine life, is the storehouse of fuel, and must be present in large enough amounts to supply energy until the breast milk "comes in" to take its place. Clinical experience bears out the inference that infants without a good layer of fat at birth should receive food at the earliest possible moment. The practical directions are that "weak or premature infants should be fed shortly after birth, preferably with the milk of another woman; but when this is lacking, a 5 per cent. solution of some sugar, such as lactose, should be given as a temporary expedient." This addendum is not as likely to disturb an easily upset digestive apparatus as cow's milk is at such early ages.

There is another occasion for the depression of the physiologic functions in the new-born which may be averted. Heat may be lost through the water bath instituted too early. Temperature may actually become diminished and untoward consequences may arise in infants that are not vigorous at birth. Talbot believes that the bath, being a possible cause of chilling, as actual temperature records show, should be entirely discarded in the case of the new-born. Warm oil may be used to cleanse the body without evaporation and excessive loss of heat from the delicate organism.

1. Talbot, F. B.: Physiology of the New-Born Infant, Am. Jour. Dis. Child., June, 1917, p. 495.

FETAL ATHYREOSIS

Students of human thyroid disease will be interested in a series of observations with respect to the iodin requirement of pregnant animals reported from the field of animal husbandry. It is known that a large percentage of the sows in certain sections of the Northwest have given birth to hairless and otherwise defective young. Many of these pigs are born dead; others die in an hour or two, and few live more than twenty-four to thirty-six hours. The resulting loss in Montana amounts to about 1,000,000 young pigs annually. While the loss is heaviest among swine, there are numerous cases among sheep, and occasionally among cattle and horses.

The affected pigs are carried to the full term of gestation period, and though of full size are strikingly weak and low in vitality. Most noticeable in the appearance of a typical specimen is the absence of hair. Except for a few tactile hairs on the nose and a few around the eyes, the skin is smooth, shiny and bald. This scantness of hair varies from almost no hair through all gradations to the normal amount. The skin, particularly around the shoulders, feels pulpy, and is from half to three quarters of an inch in thickness. It is semitransparent and apparently edematous, but no fluid escapes on incision. The hoofs are thin walled, short, brittle, and evidently in an undeveloped condition. The heart, in every case examined, has a persistent foramen ovale. The thyroid is dark red, sometimes almost black, and presents a most constant enlargement. A histologic examination shows a uniform hyperplasia and a distention of the blood vessels.

It will be noted, as Smith[1] has pointed out, that the apparent symptoms of the affected pigs correspond in many details to those of myxedema in its classic type, and to the symptoms sometimes described by the earlier surgical workers as arising after extirpation of the thyroid. The hyperplasia of the thyroid varies proportionately with the acuteness of the malady.

The hypotheses that this affection of the pigs is due to the presence of some toxic substance taken with the food or to an infective agent of low virulence have not been found tenable. The evidence gathered by Smith at the Montana Experiment Station indicates that the malady is caused by the malfunction of the thyroid. An examination of the glands of affected animals showed that they are abnormally large, that the iodin content is extremely low in comparison with that of normal pigs, and that in general the iodin content varies inversely with the degree of hairlessness of the skin. An iodin deficiency during the gestation period causes a lack of function and hyperplasia of the fetal thyroid, resulting in an arrested development of the fetus.

It thus appears that, if certain as yet unknown conditions are favorable, the mother may obtain the amount of iodin required for the activities of both her own and the fetal glands; but if these conditions are not favorable, the maternal organism can still obtain the amount required for the activities of its own thyroid but not enough for the rapidly growing fetus. The iodin starvation of the fetus depresses the physiologic activity of the fetal thyroid, which causes the remarkably arrested development peculiar to this malady. The feeding of iodids is reported to have averted the appearance of fatal athyreosis in regions in which it would otherwise have been expected to occur.

If the facts reported may be taken as evidence, to quote Smith, that an abundant secretion of the fetal thyroid, during the later stages of intra-uterine life, is essential for the normal development of the fetus, certain important consequences suggest themselves to students of the human fetal development. The need of a suitable intake of iodin during pregnancy attains a new and perhaps unsuspected significance. Until something more definite is known, however, regarding the actual consumption of iodin in the food of man in different regions, it would be hasty to draw any far-reaching inferences. The problems of thyroid function need to be approached from many angles.

1. Smith, G. E.: Fetal Athyreosis, a Study of the Iodin Requirement of the Pregnant Sow, Jour. Biol. Chem., 1917, **29**, 215.

Current Comment

THEORIES AS TO THE ETIOLOGY OF PERNICIOUS ANEMIA

Pernicious anemia remains, even at the present day, one of the perennial puzzles of the student of the etiology of disease. A few innovations, such as transfusion and splenectomy, have been introduced into the therapy of this insidious malady; but it would be rash to ascribe any lasting advantage to any of the proposed methods of treatment. Obviously, these will remain in the category of hit-and-miss procedures until the underlying cause or causes of pernicious anemia are better understood. Accordingly it is worth while, now and then, to take stock of the proposed explanations that are current and to learn what hypotheses have survived the criticism of competent observation or the test of investigation. Without some theories as guiding motives, little progress is made in the medical sciences. Squier[1] has recently summarized the more conspicuous conclusions regarding the genesis of pernicious anemia. We may temporarily dismiss consideration of one of the familiar hypotheses — hypersplenism — which is commonly discussed in this connection and forms the basis for the operative removal of the spleen as a therapeutic measure. The success of this can as yet scarcely be regarded as sufficiently striking to establish definitely a splenic etiology, at least in any preponderating rôle. The special part played by the spleen in the hemolytic proc-

1. Squier, T. L.: Concerning the Chemistry of Pernicious Anemia, Jour. Lab. and Clin. Med., 1917, **2**, 552.

esses of the disease that are now well known remains decidedly uncertain. Pernicious anemia has also been ascribed to a general disturbance of the lipoid mechanisms and functions of the body. As the result of such abnormality, hemolytically active substances like oleic acid or similar fatty acids might be liberated in undue amounts and exert a baneful influence on the integrity of the blood cells. Furthermore, the latter are known to abound in phosphatids and cholesterol compounds which are intimately concerned in hemolytic phenomena. The erythrocytes in pernicious anemia are notably susceptible to the influence of certain hemolytic agents. Somewhat more tangible, though equally indefinite, are the hypotheses that make pernicious anemia the result, as Squier expresses it, of a gastro-intestinal disturbance leading to destruction of mucosa sufficient either to allow undigested proteins to leak through into the blood stream where their parenteral digestion liberates protein poisons, or of the absorption of known hemolytic toxins produced in the course of intestinal putrefaction. In either case, Squier adds, the poison has a destructive influence on the intestinal mucosa, as well as the more evident hemolytic effect, and this results in the establishment of a vicious circle. We may confidently expect that before long the study of experimentally produced anemias will give much needed evidence as to the tenability of the hypotheses which are becoming more clearly defined from time to time.

THE NORMAL REACTION OF THE INTESTINAL TRACT

The sensitiveness of the digestive enzymes even to slight changes of reaction obviously renders it desirable to know what conditions they are likely to encounter in this respect in the different regions of the alimentary tract to which they may be carried. The behavior of each digestive secretion may be essentially changed by admixture with other fluids pouring into the gastro-intestinal canal for a variety of reasons. Shifts in the reaction of the mediums, the possible interaction of the enzymes themselves, and the even less well analyzed activating functions which one secretion may perform for another are features that illustrate how complicated the chemical processes represented by the combined action of all the fluids that are brought together within the intestine may become. The reaction of the intestinal contents is believed to be of moment not only for the enzymatic changes that may proceed within them but also in determining to a considerable degree what microorganisms may gain a foothold in the alimentary tract. Thus distinctly acid conditions undoubtedly inhibit putrefactive processes; but the degree of acidity requisite and the possibility of establishing this within the lower bowel are by no means demonstrated. There are several series of observations on record relating to the reaction of the intestinal contents, but they are decidedly contradictory. One might readily conclude from these reports that the reaction is an exceedingly variable factor even in the same species. Nearly all of the published statements are based on tests made with the familiar indicators, such as litmus. For the range of reaction bordering on neutrality, such as is characteristic of most physiologic fluids, the significance of the older indicator methods is anything but exact. The newest investigations in this field, by Long and Fenger[1] of Chicago, are more trustworthy because they are based on exact electrometric determinations of the hydrogen-ion concentration of the intestinal contents of man and animals. Intestinal fluids were collected from various levels in the alimentary tract by the aid of a narrow Rehfuss tube taken in to a considerable length. By this method it was found that in the human small intestine the reaction may vary from distinctly acid to slightly alkaline on the part which may be reached by the Rehfuss tube. When the tube is far enough down to secure a uniform mixture of contents, the acid reaction is apparently as common as the alkaline, but the degree of acidity is not sufficient to check the normal tryptic digestion, which in some instances seems to be favored by a reaction on the acid side of neutrality. The reaction found must vary with the state of digestive activity, and is simply an equilibrium condition between the chyme and the alkaline juices poured into the duodenum. Any reaction near neutrality may obtain. These new facts are valuable, not only from the standpoint of the possibilities afforded to digestive activity or bacterial inhibition, but also as indexes to the behavior which drugs that undergo chemical reactions in the presence of acids or bases may be expected to exhibit in the parts of the alimentary tract beyond the stomach.

THE BEHAVIOR OF MALIC ACID IN THE BODY

The organic acids which are found in many of the fruits which enter into the dietary of man were long the subject of misinterpretation with respect to their behavior in the body. Thus the "acid" fruits were at one time commonly charged with functioning in a way to augment the acidity of the organism, whereas we later learned to appreciate that many, if not most, of the dietary organic acids are oxidized in the body so as to give rise to carbonates. In this way the end-result of their metabolism is quite the reverse of what might be expected from a fixed acid substance. The consequent deduction that all organic acids are easily burned up in the organism, and therefore never exhibit any action more unusual than that shown by an ordinary oxidizable foodstuff, is almost as erroneous as the reverse conception of the unvaried acid manifestations of the substance under discussion. The truth seems to lie midway between these extremes of unwarranted generalization, so that we must at length recognize the necessity of learning specifically the behavior and the fate of each individual of the organic acid group in the living organism. When this is done there will be opportunity to discover, at the one extreme, compounds, like oxalic acid, which are extremely toxic and seem to traverse the body unchanged; others, like benzoic acid, which are not destroyed in the metabolism, but are conjugated with substances, like glycocoll,

1. Long, J. H., and Fenger, F.: On the Normal Reaction of the Intestinal Tract, Jour. Am. Chem. Soc., 1917, **39**, 1278.

forming, in the instance cited, the innocuous hippuric acid of the urine; and still others, like tartaric and citric acids, which represent intermediate examples between the deportment just cited on the one hand and complete utilization in the body on the other. The behavior of some of the foregoing compounds was discussed recently.[1] To these may now be added the newest findings with respect to the salts of malic acid, which likewise is present in familiar fruits of the dietary.[2] Even this supposedly innocuous substance is not completely destroyed in the organism, according to Wise's observations on experimental animals; most of it, however, disappears in the metabolism, so that only small proportions are ordinarily excreted by the kidneys. In contrast with the acids previously considered,[1] malic acid must be administered in far larger doses than tartaric or citric acids, for example, in order to elicit signs of toxicity. Even very considerable amounts of sodium malate are not followed by such untoward symptoms as nephritis or glycosuria. Malic acid which escapes oxidation in the body is readily eliminated by the kidneys.

CASUALTIES IN THE MEDICAL CORPS OF THE BRITISH ARMY

There has been such an astonishing amount of misinformation, exaggerated and sensational statements, published in this country regarding the casualties among medical officers in the British Army that Col. T. H. Goodwin of the British Army Medical Service, now in this country, cabled to the British War Office for the actual facts. He received the following data: The total casualties among medical officers of the British forces, on the western front, from the beginning of the war to June 23, were: killed, 195; wounded, 707; died of disease, 62. Hence the total number of casualties from actual war injuries on the western front was 902, of which 195 were in killed. This is entirely different from some of the statements which have received wide publicity in this country — some even semiofficial in character — which have reacted to the detriment of the efforts to secure officers for the Medical Reserve Corps.

INFANT DEATH RATES AND SOCIAL CONDITIONS AT MANCHESTER, N. H.

That the various conditions associated as causes and results with low earning capacity on the part of the father result in a high death rate in infancy among his offspring is shown in a report on infant mortality at Manchester, N. H., just issued by the Children's Bureau of the United States Department of Labor. A study was made of all babies whose births were registered during a single year and whose families could be found. In the entire group, 1,643, the death rate was 165; but the death rate among the poorest families was more than four times as high as among the families in the highest wage group. Among 119 babies whose mothers went out to work before the babies were 4 months old, the death rate was 277 per thousand. In families able to live in a one-family house, the death rate among babies in the first year of life was 86; when circumstances compelled residence in houses containing seven or more families, the death rate was 237. In families able to provide more rooms than there were persons in the family, the death rate was 124; when there were two or more persons per room, the death rate was 246. In each economic group the babies who were artificially fed had fewer chances of survival than did the babies whose mothers nursed them, but the difference in the death rates for breast fed babies and for those artificially fed is influenced by the economic status of the family, and is least among families of the highest income group.

1. The Behavior of Three Organic Acids in the Body, editorial, THE JOURNAL A. M. A., March 31, 1917, p. 984.
2. Wise, L. E.: Elimination of Malates After Subcutaneous Injection of Sodium Malate, Jour. Biol. Chem., 1916, **28**, 185.

Medical Mobilization and the War

Eligibility of Physicians of Foreign Birth for Service with Base Hospitals

To the Editor:—I note in the press that "the State Department has ruled that Americans of foreign birth or blood are ineligible for service in Red Cross units, recruited for service abroad."

My father, who was born in Germany, is a good American, and has been a faithful servant of the government for over twenty-five years. My mother was English-Irish and I have had ancestors in nearly every war the United States has had.

I have qualified for a commission in Medical Reserve Corps because I felt it to be my duty as a physician to serve my country. Now it seems I am not to have as much right, as a citizen, as my grandfather had when he was killed in the last charge in front of Atlanta, or of another ancestor, when he signed the Declaration of Independence.

I know United States Army officers of German blood and birth. Why are physicians discriminated against? If printed, please withhold name. * * *

COMMENT.—We publish one letter to represent a number that have been received. There evidently is some misunderstanding. The facts as we understand them, and as recorded in the *Official Bulletin*, are: The directors of Red Cross base hospitals received from the director-general of the Department of Military Relief of the American Red Cross, Colonel Kean, a copy of a letter from the state department to the effect that base hospital units intended for service in France should not include persons of German, Austro-Hungarian, Bulgarian or Turkish nationality or birth, "or American citizens whose fathers were born in Germany, Austro-Hungary or allied countries." It must be understood that this action does not refer to Medical Reserve Corps officers—that is, to those who may be sent to France with the troops; but to those composing the so-called base hospital units that have been in course of formation for over a year—long before war with any European country was considered probable (see THE JOURNAL for June 2, p. 1630), of which a number are already in France in connection with the base hospital work of the French and English armies. These base hospital units are, in a way, independent of our main army.

Commenting on this matter Mr. Henry P. Davison, chairman of the Red Cross war council of the American National Red Cross, says:

> In view, however, of the earnest and whole-hearted way in which so many Americans have volunteered their services in manning these base hopital units, this ruling of the allied nations is peculiarly embarrassing to the work of our Red Cross. The Red Cross has, of course, never questioned the loyalty of any American citizen.
>
> It is not difficult to appreciate the attitude of the allied governments, responsive as they are to the sentiment of their peoples. . . .
>
> Obviously, no such ruling can be applied against our troops who will soon be fighting side by side with the allies in France, and I am confident that when the situation is fully understood exemption will be made in favor of those loyal American citizens who are sent to participate in the humanitarian work our Red Cross is undertaking.

Misinformation as to Physicians in the War

To the Editor:—In reading the June 22 number of the Boston *News Bureau*, I noticed the following article taken from the *Wall Street Journal:*

Reports indicate that heaviest losses in the present war have been suffered by the medical corps. In former wars, physicians were kept in the rear, but not so now. Four doctors accompany each regiment, and three of these are sent to the firing line with the troops to give immediate aid to the wounded. Without arms and with no way of protecting themselves, these men are mowed down. Already 60,000 have been killed. In a recent engagement 257 were killed in an hour; in another engagement 7400 were killed. An ambulance driver, temporarily called from his post, returned to find only twelve persons left out of the original 165 on duty when he went away.

I am wondering if something can not be done to avoid this awful butchery of our medical men, for I understand that our government has called on all persons to do their part in the way they can be most useful, so why not let the surgeons remain in the hospitals at the rear of the firing line, where they could relieve the suffering of perhaps thousands, while if they are sent to the front, they can only relieve a few at best. So I hereby appeal to you, as editor of the great A. M. A. JOURNAL, to use your influence, and protest to the higher powers to change the system, remembering that skilled physicians are not made to order, but that it takes many years of training and preparation to fit a man for the medical profession, while about three months of training will make a man ready for the firing line.

(Wife of a Country Doctor.)

[COMMENT.—We give space to the foregoing letter from a physician's wife principally because of the quotation from the *Wall Street Journal*. The tremendous amount of misinformation that has been circulated regarding doctors during the past two or three months would be amusing were it not for the fact that some of the misinformation causes worry and anxiety when it is not necessary. It applies not only to the number of deaths among physicians at the front in France, but also to the preparedness on the part of the medical profession to furnish its full quota of men for the Medical Reserve Corps and, on the other hand, to the impossibility of getting one tenth as many physicians for the Medical Reserve Corps as were needed. If our correspondent will notice page 1917 of THE JOURNAL for June 23 she will notice that Colonel Goodwin has stated that there have not been 2 per cent. of 60,000 deaths among physicians in the service. See also Current Comment this week as to the actual facts regarding the casualties on the Western front.—ED.]

Promotions in the Reserve Corps

The following comment on promotions in the Medical Reserve Corps is taken from the Army and Navy *Register:*

Considerable interest has attached to the policy of the surgeon-general of the army in regard to the promotion of medical reservists who are on active duty at training camps and recruiting stations and other places. It has been generally determined that, after a reasonable period considered as equivalent to not less than ninety days, the claims of these officers to consideration for advancement might be entertained. No hard and fast rule has been adopted, however. Much will depend on circumstances, and pretty much everything will devolve on individual capacity and fitness. Least of all, will the employment of personal and political influence be of avail. That process of bringing officers to the attention of the authorities should not be used. It is certain to be more harmful than helpful in any individual case. Medical reservists at the training camps will probably be recommended for advancement by their commanding officers. Under such circumstances it will be a comparatively simple matter to pass on relative merits. Officers elsewhere stationed may, in some instances, find it advisable to make application for promotion; but it is expected that their senior officers will have the welfare of the corps in mind and will see to it that in due time the junior members, who are serving usefully, will be brought forward as qualified candidates for promotion. This statement is made from authoritative sources to supplement a shorter paragraph on the same subject published recently in these columns, which, as might be expected, attracted considerable attention and created a desire for further and more specific information on the subject of the promotion of the medical reservists.

A Medical Advisory Committee for the American Red Cross

In order to provide expert advice for the War Council of the American Red Cross in questions of sanitation and public health arising out of war conditions a medical advisory committee has been appointed as follows: Dr. Simon Flexner, director of the Rockefeller Institute, chairman; Dr. John W. Kerr, assistant surgeon-general, United States Public Health Service; Dr. Herman M. Biggs, director of the New York State Department of Health; Dr. William H. Welch, dean of the School of Hygiene, Johns Hopkins University; Dr. Frank Billings, professor of medicine, University of Chicago; Dr. M. J. Rosenau, professor of preventive medicine, Harvard University; Mr. Wickliffe Rose, director of the International Health Board; Dr. Victor C. Vaughan, professor of hygiene, University of Michigan; Dr. Charles V. Chapin, department of health, Providence, R. I.; Dr. Richard P. Strong, professor of tropical medicine, Harvard University; Dr. Richard M. Pearce, professor of research medicine, University of Pennsylvania.

Ex officio members: Col. Jefferson R. Kean, director-general, department of military relief, and Dr. T. W. Richards, assistant director-general.

A Tribute to the Doctor

The following editorial appeared in the Peoria (Ill.) *Journal:*

Twelve Chicago doctors enlisted recently for service which will probably take them to the European battlefields. According to the news reports, four of these doctors give up very large practices—and, as is generally known, a doctor's practice when once given up cannot be regained by the mere asking.

There is nothing especially unique in the announcement that twelve Chicago doctors enlisted for war service. Peoria doctors have done the same thing, and doctors in thousands of cities throughout the country have voluntarily given up more or less remunerative practices in order to offer their services to their country during war times. However, the enlistment of these thousands of doctors bears silent testimony of the rare traits which have characterized doctors since the very days of doctor pioneering.

In an address a few days ago, Henry P. Davison, chairman of the war council of the American Red Cross, paid the following tribute to the doctors: "The attitude of the doctors at this time is greatly gratifying. Unselfishness and patriotism distinguish them. The leaving of an established practice in order to do Red Cross work with practically no pay or in order to do field work at an insignificant salary surely puts the doctors down as men devoted to the best interests of the people and of their country."

Mr. Davison might just as well have gone further. Not only is the doctor who leaves for war duty an unselfish and useful man but he comes from a class which does as much service for humanity, perhaps, as any other class—in times of peace as well as war.

Here's to the doctor. If he makes big money he earns it. He never turns down a sick patient because that patient does not happen to have a bank book full of money. He works just as hard to relieve a poor man from suffering as he does to give relief to the millionaire. He knows the family woes and the family griefs—and he keeps them to himself. If he complains at being called from his bed at 3 o'clock in the morning, he doesn't carry his complaints to us.

Premedical and Medical Students in Officers' Training Camps

Representative Osborne has introduced a bill providing that medical and premedical students in attendance at national reserve officers' training camps shall be placed in medical schools to complete their medical studies, and thereafter serve in the rank for which they shall have qualified. The bill was referred to the Committee on Military Affairs.

Personal.—The following members of the Mercy Hospital staff, 1916-1917, have joined the Medical Reserve Corps of the U. S. Army: Drs. William R. McKenzie, Erwin E. Mayer, Bartus T. Baggott, Thomas K. Galvin, and Arthur F. Peterson.——Dr. Richard O'B. Shea of the staff has joined the Navy Medical Service.——Drs. Harry M. Stein, superintendent of the University Hospital, and Drs. Charles R. Edwards, William H. Toulson and John Evans have been commissioned first lieutenants in the Medical Reserve Corps. Drs. Toulson and Evans have already been assigned to duty.——Drs. Joseph L. McLaughlin and Charles W. Hoffman, of the staff of the Franklin Square Hospital, have received orders from Washington directing them to prepare to accompany the military forces to France. These two physicians volunteered their services to the government several weeks ago.

An Incident in the House of Commons

On June 7, Sir George Greenwood, in the House of Commons, asked the under secretary of war for England, the following questions: Whether a large number of American doctors had recently been sent, by arrangement with the British government, to treat British wounded soldiers in France; whether the American degrees of such doctors had been recognized for this purpose; whether he was aware that American osteopathic doctors held similar degrees and diplomas to those held by the doctors so sent to treat British wounded in France and were equally qualified to practice in the United States; and whether, in view of these facts, he would give permission to American osteopathic doctors, duly qualified in America, to attend to and treat British wounded in this country in cases where the patients might so desire. Mr. Macpherson wrote in reply: A large number of doctors commissioned in the army of the United States have been sent to Europe, and many of the most eminent practitioners in the United States are included. The American government has commissioned the officers sent, and it is not proposed to look for any other security that these officers are qualified for the duties assigned to them.

Courses for Assistant Naval Surgeons

Courses of instruction for medical graduates who have recently been appointed in the Medical Corps of the United States Navy are being given by prominent medical schools in Boston, New York, Philadelphia, Chicago and San Francisco. About twenty-four students are enrolled at each place. The course covers six weeks and will be repeated, if necessary, for another assignment of students. This course is an abridgment of that usually given at the United States Naval Medical School at Washington, D. C. The course in Chicago is given by instructors jointly of the Rush Medical College and the University of Illinois College of Medicine. Students are in attendance at classes six days of the week, from 8 a. m. to 1 p. m. In the afternoon they go to the Great Lakes Naval Training Station for drill. The subjects of the course are bacteriology, chemistry, clinical diagnosis, genito-urinary diseases, hygiene, ophthalmology, otology, parasitology, psychiatry, roentgenology, serology, surgery, tropical medicine, medical zoology and official duties in the medical department.

Medical Students and the Draft

Surgeon-General Gorgas authorizes the statement that medical students will not be exempted from the draft, but that they will be given conditional and limited furloughs to continue their medical studies.

Orders to the Officers of the Medical Corps

Capt. W. Cole Davis, M. C., to Wrightstown, N. Y., as camp sanitary officer.

Following officers, M. C., to places specified as camp sanitary officers: Major Charles C. Billingslea, Annapolis Junction, Md.; Capts. Ralph H. Goldwaite, Petersburg, Va.; William T. Cade, Little Rock, Ark.; Neal N. Wood, Battle Creek, Mich.; Edgar D. Craft, Des Moines, Iowa; Henry C. Michie, Jr., Rockford, Ill.; Luther R. Poust, Louisville, Ky.; Alvin W. Schoenleber, Yaphank, Long Island, and Kerwin W. Kinard, Chillicothe, Ohio.

Major Archibald G. Chittick, M. C., Indiana N. G., to Fort Benjamin Harrison for duty as instructor.

Major Frederick O. Waage, M. C., Pennsylvania N. G., to Fort Oglethorpe for duty as instructor.

Col. George E. Bushnell, M. C., to report in person to Surgeon General of the army for duty in his office.

Major Ralph S. Porter, M. C., from Texas to New York City; report to Brig. Gen. William L. Sibert prepared for extended field service.

Officers of the Medical Corps to report for examination: Majors Percy M. Ashburn, Henry S. Greenleaf, Chandler P. Robbins and Perry L. Boyer; Capts. William H. Thearle, Edward L. Napier and John R. McKnight; Majors Jay R. Shook, Ernest L. Ruffner and James F. Hall; Capts. Howard McC. Snyder, Condon C. McCornack, Joseph E. Bastion, Taylor E. Darby, Samuel S. Creighton, Sidney L. Chappell and Thomas H. Johnson; Majors William N. Bispham, Albert S. Bowen, Charles R. Reynolds, James L. Bevans and William W. Reno; Capts. William H. Richardson, Felix R. Hill, Thomas J. Flynn, John J. Reddy, Edward G. Huber, Clarence E. Fronk, Norman L. McDiarmid and William B. Borden.

So much of Par. 90, S. O. 133, June 9, 1917, War D., as relates to Major F. S. Marcy, M. C., revoked.

Capt. Clarence E. Fonk, M. C., to duty at Fort Des Moines.

Lieut.-Col. Joseph T. Clarke, M. C., to Los Angeles for temporary duty.

Lieut.-Cols. Allen M. Smith and Joseph T. Clarke, M. C., to report to board at San Francisco for examination for promotion.

Lieut.-Col. Allen M. Smith, M. C., to Portland, Ore., for temporary duty.

Lieut.-Col. Thomas J. Kilpatrick, M. C., from Fort Oglethorpe.

The sick leave granted Major Robert B. Grubbs, M. C., is further extended two months.

Capt. William B. Meister, M. C., Los Angeles, to Letterman Hospital, Presidio, San Francisco, for treatment.

Capt. Charles W. Haverkampf, M. C., from West Point to Fort Oglethorpe to take charge of General Hospital.

Capt. Albert S. Bowen, M. C., now attached to Second Engineers, National Army, is assigned to permanent duty that regiment.

Medical Officers Ordered to Active Duty

ARIZONA

To report by telegraph to Commanding General, Southern Department, for duty, Lieut. A. A. McDaniel, Douglas.

ARKANSAS

So much of Par. 55, S. O. 121, May 25, 1917, War D., as relates to Lieut. William F. Ball, Batesville, revoked.

CALIFORNIA

To Fort McDowell, Lieut. Walter R. Scroggs, Richmond.

To report in person to Commanding General, Western Department, for duty, from Fort McDowell, Lieut. Henry Power, Palo Alto.

Par. 56, S. O. 141, June 19, 1917, War D., relating to Capt. John J. Kyle, Los Angeles, revoked.

Honorably discharged, Major Philip K. Gilman, San Francisco.

COLORADO

To Cornell Medical College, Capt. J. M. Steiner, Denver.

CONNECTICUT

To home, from active duty, Lieut. Charles E. Hyde, Southport.

DISTRICT OF COLUMBIA

To Fort Hamilton, Lieut. Arthur J. Hall, Washington.

To Walter Reed General Hospital, Ga., Lieut. Buckner N. Randolph, Washington.

GEORGIA

To Chicago, Capt. N. Pierce, Suwanee.

To Ft. McPherson, Ga., Lieut. William N. Adkins, Atlanta.

To Washington, D. C., Lieut. W. C. Brewer, Atlanta.

ILLINOIS

To Fort Benjamin Harrison, Lieut. Ralph H. Kuhns, Chicago.

To Washington, D. C., for instruction, Capt. H. H. Pillinger, Algonquin.

To Third Engineers, National Army, Lieut. Imas P. Rice, Oak Park.

INDIANA

To Chicago, Lieut. F. M. Whisler, Wabash.

To Fort Benjamin Harrison, Lieuts. Lee F. Hunt, Anderson; O. B. Norman, Bedford; Forrest L. Reese, Bicknell; Adrian E. Fauve, Ft. Wayne, and C. F. Bayer, Indianapolis.

To Rockefeller Institute for Medical Research, N. Y., for instruction in laboratory work, Lieut. U. G. Goodwin, Monticello.

Honorably discharged, Capt. William F. Clevenger, Indianapolis.

IOWA

To Fort Oglethorpe at Post Hospital, Capt. William H. Thomas, McGregor.

To Rockefeller Institute for Medical Research, N. Y., for instruction in laboratory work, Lieut. T. W. Kemmerer, Davenport.

KANSAS

To Fort Benjamin Harrison, Lieut. G. T. Johnson, Wamego.

LOUISIANA

To his home, Lieut. Charles L. Gauden, Elizabeth.

MARYLAND

To Baltimore, as instructor in roentgenology, Major Frederick H. Baetjer, Cantonville.

To Fort Oglethorpe, Lieut. Edward D. Ellis, Baltimore.

To Washington, D. C., Lieuts. Bartus Baggott, H. C. Bean, W. P. Dally, William Neill, Jr., S. D. Shannon and H. W. Sweeney, Baltimore.

To Sixth Engineers for duty, Lieut. Maynard J. Simmons, Indian Head.

Par. 17, S. O. 137, June 14, War D., relating to First Lieut. Maynard J. Simmons, Indiana Head, revoked.

MASSACHUSETTS

To Rockefeller Institute for Medical Research, N. Y., for instruction in laboratory work, Lieuts. D. J. MacPherson, Boston, and George L. Schadt, Springfield.

So much of Par. 27, S. O. 132, June 8, 1917, War D., as relates to Capt. A. W. Sellards, Boston, revoked.

MICHIGAN

To Washington, D. C., for instruction, Capt. Walter W. Manton, Lieuts. J. B. Seeley and H. A. Sullivan, Detroit.

So much of Par. 64, S. O. 141, June 19, 1917, War D., as relates to Capt. Walter W. Manton, Detroit, revoked.

So much of Par. 76, S. O. 132, June 8, War D., as relates to Lieut. C. E. Burt, Ithaca, revoked.

MINNESOTA

To Fort Oglethorpe for instruction, Lieut. H. L. Stickney, Rochester.
To Washington, Lieut. Stanley R. Maxeiner, Minneapolis.

MISSOURI

To Chicago, Lieut. C. K. Jones, Kingston.
To Fort Riley for instruction, Lieuts. Robert R. Glynn, Springfield, and Joseph C. Hynes, St. Louis.
To Washington for instruction, Lieuts. J. F. Hardesty, Edgar F. Schmitz, St. Louis, and James W. Rice, Kansas City.
To Second Engineers, National Army, Capt. Harry S. Crossen, St. Louis.

NEBRASKA

To Fort Riley, Lieut. Willis J. Redfield, Grand Island.

NEVADA

To Fort Riley, Lieut. Frank Tinges, Caliente.

NEW JERSEY

To Washington, D. C., for instruction, Lieut. H. M. Stein, Paterson.
To New York, to Rockefeller Institute for course medical research, Lieut. Frederic H. Thorne, Greystone Park.

NEW MEXICO

To Fort Bayard, to Army and Navy General Hospital, Capt. Ignatz D. Loewy, Silver City.

NEW HAMPSHIRE

To Fort Ethan Allen, Vt., Capt. Amos G. Straw, Manchester.
To Plattsburg, Capt. Lee C. Stillings, Surry.
Honorably discharged, Lieut. Ernest L. Huse, Meriden.

NEW YORK

To Fort Benjamin Harrison, Capt. Arthur M. Kane; Lieuts. Joseph Rosenfeld, Brooklyn; Harry P. Mencken, Long Island City; Winfield M. Hartshorn, Philip Van Ingen and John W. Warner, New York City.
To Fort Hamilton, Lieut. Ernest A. Campbell, New York City.
To Fort Niagara, Lieuts. H. L. St. John, Rochester; F. W. McSorley, Salem.
To Fort Oglethorpe, Major John T. Sprague, St. George, and Lieuts. Ernest L. Hicks, Thomas F. Lancer, New York City; R. M. Vose, Ithaca.
To New York City, Capts. Julius C. Bierwith, Long Beach, L. I., N. Y.
To Plattsburg, Lieut. H. A. Benson, Kings Park.
To Rockefeller Institute for Medical Research, N. Y., for instruction in laboratory work, Capt. Howard L. Van Winkle, Albany; Lieuts. W. L. Aycock, New York City, and S. H. Curtis, Troy.
To Fort Wadsworth, Lieut. Frederic H. Coerr, New York City.
To Washington for instruction, Capt. Alfred H. Thomas, Staten Island; Lieuts. R. B. Rhett, Brooklyn, and Morris K. Smith, New York City.
With Sixth Engineers, Lieuts. Robert E. Buckley and Russell La Fayette Cecil, New York City.
So much of Par. 83, S. O. 136, June 13, 1917, War D., as relates to Lieut. J. J. Steinfelder, New York City, revoked.
So much of Par. 83, S. O. 136, June 13, 1917, War D., as relates to Lieut. N. E. Titus, New York City, revoked.
So much of Par. 61, S. O. 124, May 29, War D., as relates to Lieut. William E. Youland, Jr., Albany, revoked.
To report by telegraph to the Adjutant General of Army for further orders, Lieut. Samuel A. Munford, Ithaca.

OHIO

To Fort Niagara, N. Y., Lieut. A. R. Warner, Cleveland.
To New York, to Rockefeller Institute for course in medical research, Lieut. Harry Wahl, Cleveland.
To Washington, D. C., Capt. Philip D. Wilson, Columbus.

OREGON

To Washington, D. C., to the Army Medical School, Lieut. Earl V. Morrow, Portland.
To report by telegraph to Commanding General, Western Department, Lieut. Fred A. Lieuallen, Portland.
Honorably discharged, Lieut. J. A. Pettit, Portland.

PENNSYLVANIA

To Allentown, Lieuts. John P. Bethel, Philadelphia, and Elmer R. Decker, Selinsgrove.
To Fort Oglethorpe, Capt. H. Fox; Lieuts. Thomas I. O'Drain, Samuel R. Skillern, Jr., and Charles M. Strotz, Philadelphia.
To Gettysburg, Lieuts. Clinton A. Kane and R. A. Schless, Philadelphia.
To New York, for instruction in medical research at Rockefeller Institute, Lieut. C. B. Reitz, Allentown.
To Washington, D. C., for instruction, Lieuts. John W. Fredette, Pittsburgh, and James E. McDowell, Philadelphia.
To Ninth Engineers, National Army, Lieut. Charles J. Cavanaugh, Philadelphia.
Honorably discharged, Lieut. John H. R. Hemminger, Somerset.
Resignation of Lieut. William M. Workman, Mt. Joy, accepted.

RHODE ISLAND

To Boston, with Fourth Engineers, National Army, Lieut. John S. Hodgson, Esmond.

TENNESSEE

To Fort Oglethorpe, Lieuts. George E. Horton, Wartrace, and Albert T. Ingalls, Chattanooga.

UTAH

To Fort Douglas, Capt. Harry N. Mayo, Salt Lake City.
So much of Par. 83, S. O. 136, June 13, 1917, War D., as relates to Lieut. H. T. Wickert, Huntsville, is revoked.

VERMONT

Par. 51, S. O. 136, June 13, 1917, War D., relating to Lieut. Henry R. Weston, Windsor, is revoked.

VIRGINIA

To Fort Oglethorpe for instruction, Lieut. R. B. Shackelford, The Plains.
To New York, to Rockefeller Institute for course in medical research, Lieut. B. L. Crawford, Richmond.

WISCONSIN

To Washington, D. C., for instruction, Lieut. T. D. Smith, Neenah.

WYOMING

To Yellowstone National Park, Lieut. Frederick H. Spärrenberger, Fort Yellowstone.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CONNECTICUT

University Receives Money.—Yale University has received pledges to the amount of $250,000 for the endowment fund of the School of Medicine, and also $260,000 for the equipment of the Yale Mobile Hospital Unit.

Completion of Memorial Laboratory.—The Brady Memorial Laboratory, which was presented to Yale University as a memorial to the late Anthony N. Brady, has been completed at a cost, with the equipment, of approximately $175,000. It is situated on the grounds of the New Haven Hospital and will house the departments of pathology, bacteriology, pathological chemistry, obstetrics and gynecology and medicine.

ILLINOIS

Fund for Evanston Hospital.—The campaign to raise $150,000 for the Evanston Hospital, contingent on which Mr. James A. Patten's gift of a similar amount to the hospital was made, will commence July 1.

Safeguarding Interests of Physicians During Military Service.—The Adams County Medical Society has taken steps to provide for the families of members who are called to the front and also to secure the practices of these physicians until their return to civil practice.

Personal.—Dr. William M. Hanna was elected medical director of the Illinois Encampment of the Grand Army of the Republic at its meeting in Bloomington, June 8.——Dr. Wilbur E. Post is a member of the commission which has left for Russia, under the chairmanship of Dr. Frank Billings.

Lecture on Poliomyelitis.—Dr. Ludvig Hektoen, head of the department of pathology and bacteriology in the University of Chicago, and director of the Memorial Institute for Infectious Diseases, delivered a lecture on poliomyelitis at the University of Illinois College of Medicine, Chicago, June 28.

A New Method of Working the Doctor.—A physician of Galesburg, who asks that his name be not mentioned, writes:

A man called at the office giving his age at 62 years, with sandy mustache, 6 feet tall, blue serge suit, soft shirt and collar, fibrous tumor on right side of lower jaw, rectal fistula, opening about 2 inches to left of anus. Gave his home as Urbana, Ill. He made all arrangements for operation, engaged his room at hospital and a special nurse to care for him, but did not want to go to the hospital until he heard from his brother, who was to send him a check to defray expenses and also was to be present at operation. The second day he reported to me that he had received a letter from his brother who would be unable to be present at the time of operation. He gave me his brother's address and told me to wire his brother after the operation. He also presented me a check for $200 which his brother had sent him and asked to deposit it in the bank to my credit. I took him to the bank and he deposited $150 to my credit, taking $50 in cash, which he said he wanted to buy handkerchiefs, bath robe and night gowns for use at the hospital. He told me later that his niece would

probably be present. The result is, the nurse reported at the hospital but the old man never appeared at the hospital. He simply got the money and left town. Telephone communications with Urbana reveals no such person.

INDIANA

Safeguarding Interests of Physicians During Military Service.—The Indianapolis Medical Society has adopted measures for safeguarding the personal interests of members who are called into active military service.

Interns Win Strike.—The staff of interns at the Indianapolis Hospital which went on strike, June 15, because a colored physician had been named as intern at the hospital, returned to their duties at the hospital the next day on being notified that the intern had been dismissed.

Health Board Changes.—At the annual meeting of the Indianapolis City Board of Health, Dr. Gustavus B. Jackson was reelected president; Dr. Thomas B. Eastman, vice president, and Dr. Herman G. Morgan, secretary.——Dr. Edouard J. Dubois, city bacteriologist, was given an indefinite leave of absence to cover his term of service as camp bacteriologist at Fort Benjamin Harrison.

New District Officers.—Ninth District Medical Association at Noblesville, May 24: president, Dr. Fred A. Dennis, Crawfordsville; vice presidents, Drs. Omer D. Hutto, Kokomo, and Alvin R. Kerr, Melott; secretary-treasurer, Dr. Herman A. Beck, Lebanon.——Fourth District Medical Association at Greensburg, May 22: president, Dr. Elmer U. Wood, Columbus.

Physician Wins Verdict.—In the case of Dr. William A. Oyler, Ober, against the Eastman Hospital and Dr. J. Rilus Eastman, Indianapolis, in which $10,000 damages was asked on account of alleged neglect in an operation for appendicitis on the 2-year old son of the plaintiff. Dr. Eastman introduced expert evidence that the operation had been scientifically, intelligently and skilfully performed and the jury returned a verdict in his favor.

Personal.—Dr. Alexander P. Gammack, South Bend, who has been serving with the Royal Army Medical Corps in France, has received the "Croix de Guerre."——Dr. Paul F. Martin has returned to Indianapolis after a year in the War Hospital, Pardubitz, Bohemia, and the American Red Cross Hospital, Vienna.——Dr. William Harrison, Kokomo, was operated on for appendicitis at the Good Samaritan Hospital, June 26, and is reported to be doing well.——Dr. Harry E. Sharrer, Hammond, has been appointed chief surgeon for the New York Central Lines for the Chicago district.——Dr. Jehu Z. Powell, Logansport, is under treatment for gallstone disease in St. Vincent's Hospital, Indianapolis.——Dr. Jonathan E. Canada, Fort Wayne, has been appointed assistant medical examiner for the Norfolk and Western system.——Dr. Eugene B. Mumford has been appointed director and Dr. Homer W. Cox, physician in charge of the Summer Mission for Sick Children at Fairview Settlement, Indianapolis, which opened to receive patients, July 2.

IOWA

Safeguarding Interests of Physicians During Military Service.—The physicians of Des Moines County have taken action to protect the interests of physicians who are called to the colors.

KANSAS

Society Provides for Military Members.—Kingman County Medical Society has taken action to provide for the interest of members commissioned in the Medical Officers Reserve Corps and called into active duty.

State Board Election.—At the annual meeting of the State Board of Medical Examiners in Topeka, June 19, Dr. George Morris Gray, Kansas City, was reelected president and Dr. Henry A. Dykes, Lebanon, was reelected secretary. Twenty graduates of the Kansas medical schools took the examination for license to practice.

Meeting of Health Officers.—At the annual meeting of the Kansas State Association of Public Health Officers, held in Kansas City, Mo., the following officers were elected: president, Dr. Burton K. Kilbourne, Minneapolis; vice president, Dr. Harry L. Aldrich, Caney; and secretary-treasurer, Dr. J. Carroll Montgomery, Manhattan.

Decatur-Norton Officers Show Patriotism.—At the meeting of the Decatur-Norton Medical Society, resolutions were adopted commending for their patriotism, physicians who have entered the military service and agreeing to assist in relieving the financial burdens of those so called by attending to the practice of the absent physicians, and on their return giving back their practice, and deploring and discouraging the attempt of physicians to locate permanently in a community temporarily vacated by a physician who has gone to the front.

MARYLAND

New Base Hospital.—The University of Maryland base hospital unit is rapidly assuming shape. It will be a duplicate of the Johns Hopkins unit, with twenty-six doctors, sixty-five nurses and seventy-five enlisted men. Dr. Frank Martin has been commissioned major; Dr. Archibald C. Harrison, major; Dr. Arthur M. Shipley and Dr. Cary B. Gamble, captains, and Dr. G. Perry Ross, first lieutenant. The organization is in charge of Dean James M. H. Rowland of the University of Maryland.

Transfer of Quarantine Deferred.—The Baltimore city authorities are reconsidering the transfer of the Quarantine Station to the United States Public Health Service. Reports that New York has decided to retain control of its quarantine station for the purpose of maintaining an open port are said to have caused the postponement of the transfer indefinitely. The Public Health Service was scheduled to take charge this week, the federal government having agreed to pay the city $177,000 for the buildings, grounds, boats and other equipment. Municipal officials now fear that federal control of the station would shut Baltimore out of what they call "an open port" and thereby seriously cripple its business. The agreement to turn the station over to the Public Health Service was contingent on federal control of the stations in New York, Philadelphia, Boston, Norfolk and elsewhere on the Atlantic seaboard.

MICHIGAN

Safeguarding Interests of Physicians During Military Service.—The Wayne County Medical Society will post in its club house a list of its members who go to war. It has also constituted a committee to care for the dependents of these physicians.

MINNESOTA

Safeguarding Interests of Physicians During Military Service.—The Hennepin County Medical Society has appointed a committee to look after the interests of the younger physicians who go to war. It also adopted a plan to provide medical relief for families of men in service. This plan will be carried into effect in cooperation with the American Red Cross. The Nicollet-LeSueur County Medical Society has adopted a similar measure.

MISSISSIPPI

Safeguarding Interests of Physicians During Military Service.—The Forrest County Medical Society has taken action to safeguard the interests of members who enter the army.

MISSOURI

Safeguarding Interests of Physicians During Military Service.—The Missouri State Medical Association has constituted a committee to formulate plans for caring for the practice of physicians called to service in the army and navy, and has asked the cooperation of all practitioners in the state. Component county societies will be asked to approve these plans.

NEVADA

Resolutions to Abrogate Patent on Salvarsan.—At a recent meeting of the Washoe County Medical Society in Reno, resolutions were adopted advocating the abrogation of the patents on salvarsan similar to those adopted by the Chicago and St. Louis medical societies.

Personal.—Dr. M. Rollin Walker is taking some special roentgenologic work in the Chicago clinics.——Dr. Henry Ostroff, Reno, has been appointed district surgeon for the Southern Pacific system, to succeed Dr. William H. Hood, Reno, resigned after more than twenty years' service.

NEW HAMPSHIRE

Safeguarding Interests of Physicians During Military Service.—The Belknap and Grafton County Medical societies have arranged to conserve the practices of members called into the medical service of the government.

NEW MEXICO

Safeguarding Interests of Physicians During Military Service.—The Santa Fe County Medical Society has taken action to protect the interests of members who volunteer for active service during the war.

NEW YORK

Sanatorium Plans Approved.—The state board of health has approved the plans and specifications for the new tuberculosis hospital for Rensselaer County. Bids were opened, July 2.

Convalescent Home Opened.—The Jewish Home for Convalescents at Grandview-on-Hudson was opened, June 17. The building cost $100,000 and has accommodations for 300 patients. It is supported by the Federation of Roumanian Jews.

War Cross for Schenectady Physician.—Dr. Charles Briggs, Schenectady, attached to the Norton-Harjes Ambulance Unit of the American Red Cross has received the war cross for courage and devotion; the cross being bestowed at a special ceremony held at the front by General Dauvin.

State Law May Bar Liquor Advertisements.—Under the Hill-Wheeler local option law recently signed by Governor Whitman, newspapers containing liquor advertisements cannot be circulated through the mails in the 500 "bone dry" towns in this state, nor in cities that may go dry under this law. William H. Anderson, state superintendent of the Anti-Saloon League, has written to the postmaster-general that this is the construction which must be placed on Section 30 of the Raines Liquor Tax Law.

Safeguarding Interests of Physicians During Military Service.——The Medical Society of the State of New York has adopted a plan for aiding members who enter the medical services of the country.——The Kings County Medical Society, the physicians of Rochester and the Wyoming County Medical societies have approved this action of the state organization.——The Albany County Medical Society has taken a like action.——About 300 medical men of Buffalo adopted resolutions looking toward conserving the practices of physicians who are called to the colors.

Civil Service Examinations.—The state civil service commission announces that the examinations for the following positions in the state, county and village service will be held, July 28: assistant chemist, public service commission, first district, salary $1,200 to $1,500, men only, graduate chemists with two years' practical experience; sanitary engineer, state architect's office, salary $1,800 to $2,500, four years' satisfactory experience in sanitary engineering; physiologic chemist, state department of health, salary $1,500, at least three years' practical experience in physiologic and biologic chemistry. Applications should be addressed to the State Civil Service Commission, Albany, and should be received at the office of the commission on or before July 18.

New York City

Ambulance Donated.—The National Association of Credit Men has voted to send two field ambulances to France, as memorials to two of its deceased presidents, James Graham Cannon of New York and John Field of Philadelphia. Funds have been appropriated to maintain the ambulances for six months.

Memorial to Dr. Bangs.—A bronze memorial tablet to the memory of Dr. L. Bolton Bangs which has been placed in the foyer of the New York Post-Graduate Medical School and Hospital was unveiled by the board of directors and faculty of that institution, May 29. Addresses were made by Drs. Frederic E. Sondern, Clarence C. Rice and James Pedersen and Bishop Courtney.

Columbia War Hospital.—Lieutenant-Colonel Schreiner of the Medical Corps has been sent from Washington, D. C., to inspect the building of the Columbia War Hospital, which is now nearing completion and which is designed for use as a receiving and forwarding hospital for the army medical service. Colonel Schreiner favors the taking over of the hospital by the government.

Personal.—Dr. Moses Kahn, who has been absent for six years, during which time he has been devoting himself to the study of tuberculosis, has resumed his practice in Brooklyn. ——Dr. Marcus B. Heyman has been appointed medical superintendent of the Manhattan State Hospital, Ward's Island. ——Dr. Jacob L. Maybaum has been appointed instructor in laryngology in the New York Post-Graduate Hospital.

New York's Red Cross Fund.—When the city officially closed the Red Cross campaign on June 26, it announced a total of $37,847,893, a little more than $2,000,000 short of the allotted $40,000,000. The shortage is being gradually decreased and it is believed will in a short time be made up. The New York Chapter of the Red Cross has started a campaign among the city's employees, numbering 160,000, to raise one million dollars.

Award of the Seaman Gold Medal.—The Seaman gold medal, given by Dr. Louis Livingston Seaman, and annually awarded by the American Museum of Safety for progress and achievement in the promotion of hygiene and the mitigation of disease, has been conferred on the Julius King Optical Company for scientific research and progress achieved in overcoming the harmful effects of ultra-violet and infra-red rays of light in connection with arc-welding and other industrial processes at very high temperatures.

Health Department Abandons Diazo Test.—The diagnostic laboratory of the department of health announces that last year 1,700 specimens of urine were examined for the diazo reaction. Of this number less than 250 gave a positive reaction. As there is great doubt expressed as to whether this gave a real assistance to the physician in arriving at a diagnosis, the department feels that the time consumed in this work might have been better employed. It has therefore decided to discontinue the examination of specimens for the diazo reaction.

Again a Safe and Sane Fourth of July.—New York has this year followed the policy pursued for some years of endeavoring to eliminate Fourth of July accidents. The celebrations included patriotic meetings, addresses, music in the parks and a rally in the city college stadium. In 1903 there were 415 persons in the United States that developed tetanus following Fourth of July pistol and firecracker wounds. In 1908 there were seventy-six such cases with fifty-five deaths, while last year there was only one case recorded and this occurred in New York.

Newspaper Bans Patent Medicine Advertisements.—The *Harlem Local* of New York has written a letter to the health department stating in strong terms the stand it has taken against patent medicine advertisements. It writes "We shall continue to refuse to accept advertising not only of scurrilous patent medicine tradesmen, but also of liquor and tobacco manufacturers. We have our own convictions as to the uses and abuses of these wasteful and nerve eating drugs and do not propose to be a party to their exploitation, directly or indirectly."

Shortage of Nurses Confronts City.—It is reported that the shortage of professional nurses in New York has assumed such serious proportions as to alarm the committee on nurs- of the mayor's committee on national defense. It is stated that the Red Cross alone has been draining the resources of the country at the rate of 200 nurses a month and this did not include the nurses attached to the base hospital units. In order to ascertain just how serious this shortage is, the committee is taking a census of all the nursing resources of the city with the view of establishing a bureau through which effective readjustments of trained and volunteer service can be made.

To Train a Reserve Corps in Child Welfare Work.—The Bureau of Child Hygiene of the department of health is prepared to give a series of short courses in practical methods of infant and child feeding and care. These courses are to be open to many women who desire to have a working knowledge of this type of preventive health work. The courses will be given in the fifty-nine baby health stations of the department of health. The courses will be of six weeks' duration and are open to women between the ages of 21 and 45. They are intended to offer a practical way to share in the duty of conservation of child life and in the prevention of the high infant mortality and morbidity which European nations at war have experienced. The department of health intimates that it may possibly need assistance of this nature in the future and wishes to have trained women available in emergency.

Patent Medicine Registration Proceedings.—The long delayed test case involving the validity from the constitutional standpoint of that section of the Sanitary Code which requires the registration of patent or proprietary medicines in the department of health, has been submitted to the appellate division of the supreme court of the first department for decision. This case arose out of injunction proceedings instituted by Messrs. H. Planten and Son, Charles W. Crit-

tenton and Fougera and Company. While these proceedings have been pending the department of health has not enforced the provisions of this section. If the court decides that the enactment of the section is within the powers and validity vested in the board of health, and is a reasonable exercise of such power, and therefore a constitutional and valid provision of law, the department will be in a position to start proceedings to enforce compliance with the terms. Although the department has complied with its agreement in not compelling registration pending this litigation, more than 3,763 preparations have been voluntarily registered with the department of health, on application made by 1,050 persons or firms.

OHIO

Safeguarding Interests of Physicians During Military Service.—The Ohio State Medical Association adopted a resolution at its Springfield meeting recommending that component county societies take action to care for the practices of physicians commissioned in the Medical Reserve Corps. ——The Academy of Medicine of Toledo and Lucas County has established a patriotic fund to care for the families of physicians absent from their practices while in active military service. Each physician who does not enlist will be taxed 2 per cent. of his income, payable monthly, for this purpose.

OREGON

Safeguarding Interests of Physicians During Military Service.—The Portland City and County Medical Society has inaugurated a voluntary subscription to provide for the needs of the families of members who offer their services to the country. It is expected that the fund will amount to $25,000 or $30,000 within a year.

PENNSYLVANIA

Safeguarding Interests of Physicians During Military Service.—The Philadelphia County Medical Society has arranged to care for the practices of members called to the colors during the absence of these physicians, 35 per cent. of the fees being transmitted to the account of these absent members.——Allegheny County has taken similar action.

Philadelphia

Older Physicians Urged to Serve in Hospitals.—Physicians too old to serve in the military medical and surgical corps should organize and fill the vacancies in the hospitals made by the departure of young physicians for the front, according to Dr. Hobart A. Hare, surgeon of the Coast Defense Reserves, who spoke before the emergency session of senior medical men for service in war time, in the College of Physicians.

City Gives More than a Million for Medico-Chirurgical Buildings.—The city will pay $1,036,000 for the Medico-Chirurgical College and Hospital, Cherry and Eighteenth streets, the buildings to be torn down and the land used for the parkway. This sum was agreed on by the city, the members of the Medico-Chi and University of Pennsylvania faculties. The buildings used for hospital purposes will remain standing during the war according to arrangements made by the mayor and the navy department, which will assume direction of the hospital.

Personals.—Dr. George Woodward has been elected president of the Philadelphia Art Alliance.—Dr. Robert Goodman has been made assistant medical instructor of the bureau of health.——Dr. Edward E. Montgomery was elected president of the Philadelphia branch of the national wartime prohibition committee at its recent meeting. The other officers are: executive secretary, Horace Geiger; treasurer, William R. Nicholson; vice presidents, Bishop Rhinelander, Edwin Madison Taylor, Dr. Ernest LaPlace, Prof. William E. Lingelbach, Dr. Judson Daland, Louis J. Kolb, Dr. Leo S. Rowe; executive committee, Dr. Edwin H. Parkin, Dr. Edward E. Montgomery, Dr. Rufus W. Miller, Albert Cross, Homer W. Tope.

Medical Institutions.—The Methodist Episcopal Hospital having been chosen by the United States government as a navy base hospital, the board of managers of the institution has decided to increase its facilities. Plans have been prepared by the architect for a large addition and the remodeling of the fourth floor of the present administration building. The addition will be four stories high with a basement 120 by 76 feet of fire proof construction with exterior walls of brick trimmed with terra cotta. The basement will be devoted to storage and locker rooms for the clothing and effects of the incoming patients. The entire first floor will contain a complete Roentgen-ray laboratory department. The second floor will be public and semiprivate wards and maternity cases will occupy the third floor.——At a recent meeting of the trustees of the German Hospital it was decided to change the name of the institution to the "Lankenau Hospital," in order to perpetuate the memory of John D. Lankenau who left his entire fortune to the German Hospital and the Mary Drexel Home. His estate was valued at $1,500,000. The present year is the one hundredth anniversary of Mr. Lankenau's birth and the board deemed it a fitting time to apply his name to the institution.

RHODE ISLAND

State Board of Health Changes.—Dr. Byron U. Richards, Pawtucket, became secretary of the state board of health, July 1, succeeding Dr. Gardner T. Swarts, Providence. Dr. Swarts has resumed practice in Providence.

TENNESSEE

Safeguarding Interests of Physicians During Military Service.—Nashville physicians have agreed to cooperate in caring for the interests of physicians who go with the Medical Corps of the Army.

VIRGINIA

Tuberculosis Clinics.—Dr. B. Lawrence Taliaferro of the Catawba Sanatorium, conducted a series of clinics in Norfolk, June 25 to 27, under the auspices of the Virginia Anti-Tuberculosis Association.

Personal.—Dr. Lazarus Karp, Richmond, has been elected state representative to the American Jewish Congress.——Dr. Charles J. Andrews has been elected president of the Norfolk branch of the Medical Hygiene Society.——Dr. Lucien Lofton has been elected medical inspector of the Richmond Health Board.

New Hospital Buildings.—Citizens of Richmond have subscribed $225,000 for the erection of a hospital for colored patients, and Major James H. Dooley has given $40,000 for the erection of a hospital for contagious diseases. The buildings, now under construction, are to be a part of the present Memorial Hospital, which is the teaching hospital of the Medical College of Virginia.

WASHINGTON

Safeguarding Interests of Physicians During Military Service.—The Washington State Medical Association has recommended to its component societies for their adoption a plan for assisting families of physicians who go to war.

Medical Contracts Filed.—Up to June 14 more than 1,000 contracts had been received by the first aid board of the state in accordance with the provisions of the new law, which became effective, June 7, under which a new medical aid board was created, this board being allowed to make business arrangements either with contract doctors or with individual physicians. Employees in hazardous industries are assured payment for the first aid treatment following an injury, as well as compensation under the industrial insurance act.

New State Officers.—The twenty-eighth annual meeting of the Washington State Medical Association was held in Spokane, June 20 to 22, and the following officers were elected: president, Dr. C. Stewart Wilson, Tacoma; vice presidents, Drs. Wilmot D. Reed, Tacoma, and Russell T. Congdon, Wenatchee; delegate to the American Medical Association, Dr. Henry H. McCarthy, Spokane; alternate, Dr. Frederick Epplen, Spokane, and trustees, first district, Drs. Hiram E. Cleveland, Burlington, and John W. Hunt, Seattle, and second district, Drs. Herman P. Marshall, Spokane, and Cornelius J. Lynch, North Yakima. Tacoma was selected as the next place of meeting.

CANADA

Canadian Soldiers Invalided.—Returns just received in Canada from the Director of Medical Services in London, England, show that on June 1 the number of Canadian soldiers invalided in the United Kingdom fell from 22,562 to 22,482, while the number of Canadians in non-Canadian institutions fell by 635.

Hospital News.—The new military hospital at Queen's University, Kingston, Ont., is now ready to receive two hundred returned convalescents.——At a meeting of the governors of Hamilton General Hospital, June 27, the offer of Colonel MacInnes to furnish a ward in the new hospital in honor of the memory of his father, the late Senator MacInnes,

and of Dr. Albert Pain and Mrs. Pain, who went down with the *Titanic*, was accepted.

Personal.—Capt. Archibald Naismith, M.D., son of Dr. Archibald D. Naismith, Staffordville, Ont., who has been two years in France with the 101st Field Ambulance, has been awarded the military cross.——The Hon. Dr. Robert S. Thornton, Deloraine, minister of education, Manitoba, was in Toronto the past week and addressed the Ontario Medical Council on one uniform medical examination for all Canada for license to practice.

Ontario Medical Commission.—The counsel for the Christian Scientists argued before the Ontario Medical Commission on June 28 that a person under the British law has the right to any treatment he desires when sick, or none at all. As far as the Ontario Medical Act was concerned, a man had the right to die if he wanted to, although the criminal code would bear on that phase. He further argued that the law allows a man the liberty of saying whether he will be attended by a regular practitioner or not. The only question under the act is that of fraud. Under the laws of Ontario, he said, Christian Scientists are not recognized any more than any other religion or sect. "It is doubtful whether in a strict legal sense, Ontario is a Christian province at all." Counsel for the different schools of healing gave information as to court decisions bearing on chiropractors, osteopaths, Christian Scientists and other practitioners in the province. It was contended that there have practically been no legal decisions which throw any light on their legal status in Ontario. Mr. H. S. Osler, K. C., counsel for the College of Physicians and Surgeons, said that if the argument was reduced to a question of fraud, then the public should be protected against fakirs and humbugs.

Ontario Medical Council.—The Ontario Medical Council met in Toronto during the week ending June 30 under the presidency of Dr. Edmund E. King, Toronto. The following officers were elected for the ensuing year: president, Dr. William E. Crain, Crupler, Ont.; vice president, Dr. Robert Ferguson, London, Ont.; registrar-treasurer, Dr. H. Wilberforce Aikins, Toronto (reelected).——Among questions discussed by the council was that of disciplining the practitioner in Ottawa, Ont., in a child substitution case of interest to Chicago and Ontario physicians. The doctor in question was found guilty of disgraceful conduct in a professional respect and his name ordered struck off the register of the college.——The federal government will be memorialized to take steps to prevent the sale of all patent or proprietary medicines containing alcohol content in excess of 2.5 per cent. It was alleged that one widely advertised patent medicine was a wine which contains 17 per cent. of alcohol and that it is of little medical value.——Newspapers were criticized and a resolution was passed calling the attention to certain patent medicine advertisements, as they were a violation of the Ontario Temperance Act.——A committee reported recommending that graduates of a number of American colleges be allowed to practice in Ontario without attending school for one year, provided they pass the examinations. A similar arrangement, of course, must be agreed to by the American states affected.——Before the next meeting a committee will gather information on the alarming menace of venereal diseases.——It was decided that a special committee should take a military census of the medical profession in Ontario. It is felt that although a large number of Ontario physicians are already on active service, a great deal more can still be done, as in some places a medical man might be able to do the work of his confrère and thereby relieve one man to go to the front. It is understood that a similar census will be taken in all the provinces of Canada, and the report when completed be placed in the hands of the Dominion government.——A resolution was passed urging that there should be only one qualifying examination in medicine for the whole Dominion of Canada, instead of one for each province as at present.

GENERAL

Meningitis in Naval Camp.—Spinal meningitis is reported to have broken out in Camp Dewey, Kitemaug, where nearly 200 junior naval reserves are encamped. Two cases have been reported and the camp is under quarantine.

Ophthalmic Examinations.—The American Board for Ophthalmic Examinations announces that the next examination will be held at Pittsburgh, October 30. Those who desire to take the examination and be certified by the board should secure application blanks and further information from the secretary, Dr. Frank C. Todd, 506 Donaldson Building, Minneapolis. Application should be made before August 1.

Sanatoriums Hold Meeting.—The fifth annual meeting of the Southeastern Sanitarium Association was held in Greenville, S. C., May 9 and 10 and the following officers were elected: president, M. M. McCord of North Carolina; vice presidents, Dr. Richard C. Smith, Newport, Tenn.; C. B. Reynolds of North Carolina; Francis A. Coward, Columbia, S. C., and A. B. Wood of Georgia, and secretary-treasurer, Clarence F. Smith, Greenville, S. C.

Change of Meeting Place.—The annual meeting of the National Medical Association of Colored Physicians, Dentists, Pharmacists and Nurses, which was scheduled for Memphis, Tenn., in August, has been changed, and will now be held in Philadelphia, August 28 to 30. The change has been made in response to an invitation extended jointly by the Philadelphia Academy of Medicine and Allied Sciences and the Northeastern Medical Association.

Personal.—Surgeon Thurlow W. Reed, Norfolk, Va., on duty at the Naval Station, Cavite, P. I., who was operated on for appendicitis at the United States Naval Hospital, Canacao, P. I., May 4, has recovered and returned to duty.——Dr. Harrison J. Hunt, surgeon of the Crocker Land Expedition, which went to the Arctics in 1913, has arrived in New York and reports that he left the expedition at North-Star Bay on December 18. Dr. Hunt made a sledge journey over the ice to Melville Bay.

Bequests and Donations.—The following bequests and donations have recently been announced:

Maimonides Hospital, Chicago, $20,000, partial proceeds of a bazaar held June 18-25.

Montreal General Hospital, $500,000; Faculty of Medicine of McGill University, $500,000, and Montreal Maternity Hospital, $100,000, by the will of Sir Samuel McDonald, Montreal.

Southampton, L. I., N. Y., Hospital, $90,000, by the will of Mrs. May Rock, Bayport, L. I.

German Hospital, Brooklyn, $5,000; Jewish Hospital, Brooklyn, $2,000, by the will of Marie Dade.

Albany Alumni Elect.—The forty-fourth annual meeting of the Alumni Association of Albany Medical College was held in Albany, June 8, and the following officers were elected: president, Dr. Robert B. Lamb, Beacon, N. Y.; vice presidents, Drs. Daniel C. Case, Slingerlands, N. Y.; C. S. Pratt, Watertown, N. Y.; Frederick C. Leonard, Carbondale, Pa.; Tiffany Lawyer, Albany, N. Y., and Norman Baldwin, Oneonta, N. Y.; recording secretary, Dr. Jesse M. Mosher, Albany, N. Y.; corresponding secretary, Dr. Clinton B. Hawn, Albany, N. Y.; financial secretary, Dr. Robert Babcock, Albany, N. Y., and historian, Dr. Arthur J. Bedell, Albany, N. Y.

New England Alumni of Maryland Dine.—The New England Alumni Association of Maryland University School of Medicine, Baltimore, held its eighth annual reunion and banquet in Boston, June 12, and elected the following officers: president, Dr. George C. Parcher, Saugus, Mass.; vice presidents, Maine, Dr. Lawrence E. Willard, Saco; New Hampshire, Dr. Fred von Tobel, Lebanon; Vermont, Dr. Frank C. Angell, Randolph; Massachusetts, Dr. Richard H. Morris, Everett; Rhode Island, Dr. Frederick R. Devine, Riverside, and Connecticut, Dr. Timothy M. Ryan, Torrington, and secretary-treasurer, Dr. Abraham K. Yoosuf, Worcester, Mass.

Civil Service Examination.—The United States Civil Service Commission announces an open competitive examination for physicians, for men only, to fill present and future vacancies in the position of physicians in the Indian Service, with salaries ranging from $1,000 to $12,000 a year; in the Panama Canal Service, with salaries of $1,800 a year; as acting assistant surgeon in the Public Health Service, with salaries from $480 to $1,800 a year; and as surgeon and assistant surgeon in the Coast and Geodetic Survey, with salaries of $1,200 a year with 20 per cent. additional while serving in the Philippine Islands. Applicants must have graduated from a medical school of recognized standing or must furnish proof of actual graduation within six months from date of graduation. They must have reached their twenty-first birthday on the date of examination, but eligibles more than 40 years of age on the date of examination will not be considered except for filling vacancies in the positions of acting assistant surgeons in the Public Health Service and eligibles who are less than 22 or more than 30 years of age on the date of examination will not be considered for positions in the Panama Canal Service. Application should be made for Form No. 1312, stating the title of examination desired, to the Civil Service Commission, Washington, D. C., or to local civil service boards.

PARIS LETTER

PARIS, June 7, 1917.

The War

TREATMENT OF COMPLICATED FRACTURES OF THE THIGH IN THE SURGICAL FORMATIONS AT THE FRONT DURING PERIODS OF GREAT ACTIVITY

G. Lardennois, at the meeting of the medical corps of the Third Army, called attention to this subject and to the impossibility of transporting directly by carriage to the specialized formations a man with a fractured thigh. On the other hand, in the surgical ambulances of the advance or the evacuation hospitals of the first line, the material and the time available may prevent the utilization of complicated methods. The surgeon in these formations should (1) disinfect the wound; (2) reduce the fracture, and (3) secure apposition of the fragments. His duty is to render the wounded evacuable to the fracture center of the region. The prognosis depends on this first intervention. The disinfection comprehends (1) the excision of dead tissues; (2) the removal of the projectile; (3) removal of splinters and fragments, and (4) the establishment of drainage. Lardennois insists on the necessity of free drainage. One or two drains are of no use. They quickly become occluded. One must make an open trench or canal which will permit the outflow of the serum and a survey of the broken bones. Whenever wounds are made by one or more projectiles, Lardennois always has recourse to posterior drainage, which will drain in the dorsal decubitus. For fractures of the middle third and the inferior third, he utilizes the space between the biceps cruralis on the outside and the semimembranosus and semitendinosus on the inside. For subtrochanteric fractures he incises vertically, exterior to the long portion of the biceps, below the gluteus maximus, which must be displaced sometimes 1 or 2 cm. to give an opening. Free access to the bone must be maintained for eight days at least, with large drains placed at angles to the wound, with separators or with careful maneuvers in the course of the dressings. The wound disinfected, the fracture must be reduced at once and the limb placed in a trough (*gouttière*). If the wounds are too extensive to permit of the application of a plaster dressing, a simple Thomas splint will assure a good reduction, maintained by extension, the limb being placed in flexion and abduction. This apparatus permits of moving the patient without pain and without danger. Whenever it is possible, Lardennois applies a plaster dressing. The plaster dressing holds the wounded limb in good position; flexion, abduction, and external rotation are more marked the higher the seat of the fracture. The thigh is flexed on the pelvis, and the leg on the thigh. This position is maintained despite the fact that the limb can move in the cast under the effort of muscular contraction. Overlapping of the fragments is impossible. The points of bearing of the plaster are the wing of the ilium and the calf of the leg. These regions must be well padded with cotton. The whole posterior surface of the thigh is free of the plaster, permitting posterior drainage. The windows permit observation of the wounds. On account of the position, the patient is able to maintain a semisitting position in the bed, or he may be placed in an armchair. He can be moved easily and carried to the dressing room, or to the roentgenography room. He can be evacuated if the roentgenogram shows good reduction and if the local and general symptoms permit. Usually at the end of eight or ten days he is able to be transported by sanitary train to the fracture center of the army, where he may be left in a cast, the Alquier apparatus may be applied, suspension used, or, better yet, he may be placed in a Delbet apparatus.

Decherf said that the ultimate results of the treatment of complicated fractures had not always been very brilliant. In the interior a great number of angular femurs were observed, with shortening varying from 6 to 18 cm. This angular deformity is due to the action of the psoas muscle and the glutei, which draw the lower end of the upper fragment upward and outward. This deformity is observed most frequently in fractures of the superior and middle thirds of the femur. On the contrary, in fractures of the inferior third, supracondyloid fractures, the deviation of the inferior fragment is conditioned on the action of the calf muscles. These muscles draw the upper extremity of the inferior fragment backward, so that the lower end of the upper fragment points forward under the skin. In the treatment of complicated fractures of the thigh, suspension is popularized in the effort to avoid all vicious unions. By this procedure, combined with extension and abduction, a maximum of straight reductions of the thigh with a minimum of shortening is obtained. In addition, the ease with which dressings are made avoids pain to the patient. The suspension apparatus comprises a hammock trough supporting the limb, supported above the plane of the bed by a system of cords running through pulleys. The traction apparatus is composed of strips of bandage terminating at the foot in two loops and held in place by adhesive bands about the leg. The loops hold a bar of wood to which is attached a cord and a weight.

The advantages of suspension are: 1. Facility in dressing. The thigh being maintained above the plane of the bed, the wound is easily inspected by merely raising the hammock without moving the patient, hence the dressings do not cause the patient any pain. 2. Facility of moving the patient, even for his hygienic care, the patient easily raising himself without the least pain. 3. Inspection of the wounded member. At each dressing the thigh is uncovered and the course of healing may be observed. If one of the fragments becomes displaced, the deviation may be corrected immediately; a flaring up of any purulent condition or a lymphangitis will be detected. 4. There is no sloughing of the heel or malleoli. 5. Early massage—the first day—is given the knee and the muscles of the thigh. 6. Union appears to be more rapid, because of greater circulatory activity; the edema of the leg disappears rapidly, in two or three days.

Emile Girou emphasized the advantages of the Thomas apparatus employed by the English. Before it was brought to his attention, he had employed an apparatus constructed by a village mechanic. This apparatus was a sort of Thomas splint, made of hollow tubes, light and inexpensive, which immobilized the fracture very well. Extension was secured by a leather boot having a wood sole with a hole in it.

TREATMENT OF INFECTED WOUNDS BY MEANS OF HELIOTHERAPY

Leriche, associate professor of the Faculty of Medicine at Lyons, has addressed to the Société de chirurgie de Paris an interesting communication on this subject. In collaboration with Mlle. Mendeleef he has been able to study the mechanism of heliotherapy by means of bacteriologic examinations of about twenty patients. The fluid which oozes copiously from the wounds exposed to the sun furnishes a veritable hunting ground for microbes—a flooding of the tissues within and without. A drop of this fluid examined under the microscope shows, according to the duration of the insolation and according to the age of the wound, either a fluid full of microbes in suspension or a fluid full of vivacious leukocytes all filled with microbes. In comparing the smears made before, during and after the insolation the phagocytosis comes out still more clearly. These observations seem to establish the fact that the phagocytosis completes the action of the mechanical disinfection accomplished by the copious exudation referred to above. The action of the sun on certain microbes appears, moreover, more rapid than on others. Leriche has seen the *Bacillus pyocyaneus* disappear definitely after one or two fifteen-minute sun-baths. He has seen the septic vibrio disappear almost completely after half an hour of exposure to the sun. After six hours of insolation the *Vibrio proteus* disappeared from a wound resulting from a tardy secondary resection of the knee which presented an abundant fetid suppuration.

In the most favorable cases (a fresh wound, excision properly performed, the surface flat) sterilization was accomplished in forty-eight hours. After two sun treatments, one of thirty minutes, the other lasting two hours and a half, the wound became sterile and remained so, under regular insolation, for the following six days. At this time the secondary suture was made and was successful. In the least favorable case (a regular, anfractuous fresh wound, accompanied by fracture of the scapula and tibia) the sterilization was brought about in from four to six days, and remained in that condition. When the wound is older, more gravely infected, or of such a nature as to prevent the sun's rays from penetrating it readily, the sterilization is less rapid still. From the standpoint of technic and indications for the procedure, Leriche emphasizes the two following points:

1. If the sun is not too strong one may, without harm, expose the wounds to the sun a long time, but if the sun is strong and hot, one should not risk the long exposure. Heliotherapy must accordingly be applied in the form of short, progressive treatments. One should not exceed a quarter of an hour the first few days, otherwise one may induce very annoying local erythemas and even troublesome general reactions (increased temperature, headaches and prostration).

2. Heliotherapy is not a panacea which dispenses with proper surgical treatment. On wounds not treated surgically it serves as a sure check. The same is true if the operation performed has proved inadequate. The wound must be fully exposed, and the sun's rays must fall as nearly directly as possible. Just as regards the mode of dressing, the conditions which surround a surgical operation are the deciding factor and the most important criterion with regard to the mode of treatment; for instance, in all places in which this exposure of the focus of the wound is not possible (the upper part of the thigh, a wound of the pelvis, etc.) it is preferable to resort to continuous irrigation, such as is accomplished by the Carrel method.

Sencert has called attention to the fact that for a long time he has applied, without exception, pure asepsis, completed by heliotherapy, not only to the fresh wounds, but also to old suppurating wounds. In regard to the latter, it is important at the start to establish the cause for the persistence of the suppuration (collection of pus, poor drainage, foreign body, bone splinters, necrosed osseous focus). When the cause of the suppuration has been established, it must be immediately removed, without loss of time in instituting a preliminary treatment of the wound by means of chemical disinfectants. Only in case the operation is completed in the first onset can untoward conditions be avoided. All loose remnants of tissue should be removed, the ramifications of the projectile should be followed up, and all anfractuosities should be suppressed, so as to display the wound completely. One should search for and remove not only all foreign bodies and the free bone splinters, but also the adherent bone splinters. The wound when cleansed, opened up and dried should be recovered with a purely aseptic dressing and daily exposed to the sun's rays. If the wound in question was operated on prematurely while still inflamed, for two or three days any necrosed tissue which was not removed at the time of the operation is rapidly eliminated, and soon there appears a red and vivacious granulating tissue. The swelling and the pain disappear. The surrounding teguments become normal again. At the end of a week the wound is completely sterile. The secretions have stopped entirely. If it is a question of a wound operated on while suppurating freely, and particularly (for that is often the case) if it is a wound complicated by a comminuted fracture, accompanied by copious suppuration, after a few days the traumatic focus is pervaded by red granulations which rapidly fill all its deeper parts. The temperature becomes normal, the patients no longer suffer, they recover their appetite, and their general condition improves rapidly. This favorable outcome, as the result of this simple treatment, is absolutely constant. If it should happen that the local and the general condition do not rapidly improve, or if a drainage of pus should persist, it may be concluded that the operation was not thorough, and that there is still in the wound a deep diverticulum, a foreign body, or a bone splinter, which is causing the infection. Up to May 1, 1917, Sencert treated by this exclusively aseptic method 492 wounds of the head, 36 wounds of the thorax, 18 wounds of the abdomen or of the pelvis, 47 wounds of the large joints, 139 diaphysial fractures, and 207 wounds (mostly multiple) of the soft parts. It is by virtue of this experience that Sencert thinks that he is justified in affirming the clinical excellence of the aseptic treatment for infected war wounds. He has been able, moreover, to confirm these clinical observations by means of a bacteriologic test, which afforded him the opportunity of verifying the development of phagocytosis and the destruction of the microbes by merely bringing into play an organic defense. One may therefore affirm that a thorough surgical operation followed by postoperative aseptic treatment through exposure of the open wounds to the air and light effects their progressive and rapid disinfection without its being necessary to resort to any chemical agent.

Also Quénu has been able to confirm good results from heliotherapy. For more than a year he has been exposing to the sun for two or three hours such wounds after they have been opened up and all loose remnants of tissue removed, and he has been astonished by the oozing of the lymph, the vascularization of the wounds and their rapid evolution toward a sterile condition and a normal coloration. Comparing these results with those produced by hot air jets at 60 or 70 C. (140 or 158 F.), he concludes that the caloric action in the two given cases is identical.

Delbet insists that the main therapeutic action of the sun consists in a reinforcement of the means of defense of an organism, and that the rays of the sun do not act as do bactericides and antiseptics, in the ordinary sense of the word. They act on the cells and on the humors. He asserts that the microbes, which, before the treatment, are for the most part extracellular, are almost all phagocytes. The formation of pus becomes much less abundant or ceases entirely.

Likewise, Chaput asserts that he has obtained good results from heliotherapy in the treatment of war wounds, torpid wounds, and tuberculous and nontuberculous fistulas; but he thinks that in our part of the country, where cloudy days are frequent, it is preferable to expose the wounds to electric light, which permits of regular and prolonged treatments. From his point of view, artificial light is much superior to heliotherapy for the treatment of local wounds. On the other hand, heliotherapy is much more active in improving the general condition of the patients.

LONDON LETTER

LONDON, June 12, 1917.

The War

THE ANTISEPTIC FLAVINE

The prevalence of sepsis in war wounds and the difficulty of coping with it by the methods in vogue in peace times has reopened the whole question of wound treatment and led to considerable research. On the one hand, the advocates of antiseptics have endeavored to find new and more powerful agents; and on the other, Sir Almroth Wright and his school have proclaimed the uselessness of antiseptics and advocated "lymph lavage" promoted by the use of hypertonic saline solution. The controversy is not yet settled. The Medical Research Committee (whose work has frequently been referred to in previous letters) has had researches made for unrecognized antiseptics of high value since the first month of the war. The committee has now issued a report on the results obtained. Work at Haslar Naval Hospital and at the London Hospital showed early the value of malachite green, which is giving good results. When it was desired to investigate flavine, which was a little known but patented German dye, none was available in this country, and its manufacture requires highly skilled work. But the committee had a supply made at its biochemical department, and investigated at the Bland-Sutton Institute of the Middlesex Hospital by Dr. Browning. In a paper published in the *British Medical Journal*, January 20 (abstracted in THE JOURNAL, Feb. 17, 1917, p. 581), he announced that it had the remarkable property of destroying bacteria without destroying tissue, and in the presence of that serum its potency was increased. Samples were sent to leading surgeons for the purpose of receiving reports for the guidance of the naval and military authorities. The uses of flavine for particular purposes have still to be carefully defined in relation to other antiseptics and to operations. Three firms are preparing to supply the public, but under our patent law it will be necessary for them to procure a license to manufacture. It is proposed that all firms shall use only one name for the substance, a condition which will restrain any firm from securing monopoly privileges by wide advertisement of a fancy name. The committee proposes that the substance shall be officially called "Acriflavine." This will avoid the German name "Trypaflavin," which is registered as a trademark, and will prevent confusion with an existing vegetable dye already called "flavine." In an address to the court of governors of the Middlesex Hospital, Sir John Bland-Sutton states that he has obtained excellent results in septic cases from flavine. It is diamino-methylacridium chlorid, which was originally prepared by Benda at the desire of Ehrlich from coal tar.

THE SHORTAGE OF DENTISTS

The shortage of physicians is a new phenomenon created by the war almost entirely. Some slight shortage, due to the increased demand for physicians caused by the insurance act, previously existed. Prior to the passage of that act there were too many physicians, at least too many to make a comfortable living. But the shortage of qualified dentists has always existed, and has only been aggravated by the war. In an address to the Liverpool Odontological Society, the president, Mr. John W. Tomlinson, gave some remarkable figures: In 1879 the number of names on the Dentists' Register was 5,289; in 1916 the number was 5,453. Thus in a period of thirty-seven years the increase was only 164. In the same period the population of the country increased from 34 to 46 millions, and the number of names on the Medical Register from 22 to 43 thousand. No other profession in the

country shows such stagnation. At a recent meeting of the General Medical Council, the Dental Committee made a report on the shortage of dentists, which was attributed mainly to the inadequacy of the dentists' act. This act prohibits unqualified practitioners from using the designation of dentists, but does not in the least prevent them from practicing dentistry. The result is that they far outnumber the qualified dentists. They treat the working classes, who are either unable or unwilling to pay the fees demanded by qualified dentists.

THE SHORTAGE OF PHYSICIANS

The effect which the constant demand of physicians for the army is having on the supply of physicians is illustrated by the report of Dr. Niven, health officer of Manchester. He has been unable to find a suitable applicant for the post of assistant medical officer at the Baguley Sanatorium, though a salary of $2,000 a year is offered.

A MOTOR LABORATORY FOR THE FRENCH RED CROSS

A motor bacteriologic laboratory for the French army has been provided by the London committee of the French Red Cross. It is extremely compact, but by means of extensions can be enlarged so as to form a room about 18 by 12 feet. Electric light and all the latest bacteriologic appliances are provided. Everything is so arranged that the whole can be packed up in a short time when required to go to another station. The total cost is $7,500. A somewhat smaller laboratory has been constructed for presentation to the French Red Cross.

Panel Practice

In spite of the greatest of all wars, domestic questions, such as the panel system, continue to be discussed. In Birmingham a joint committee appointed by the Panel Committee and the British Medical Association has just issued a report. General satisfaction on the part of the insured is shown by the diminishing numbers seeking advice as private patients. When dissatisfaction exists, its causes are stated principally to be lack of sufficient examination. The following extensions are considered necessary to make the insurance medical service adequate: 1. A consulting or special opinion in necessary cases by a panel of consultants who would see the insured in their own homes or at the consultant's offices as required. 2. Institutional treatment by panel physicians in consultation with a physician or surgeon, and operations by the latter when necessary. 3. Complete service of necessary laboratory work for diagnosis, vaccines and serums, and roentgenoscopy. 4. Nursing of patients in their own homes by a system of district nurses. 5. Dentistry, including the provision of dentures. 6. Convalescent homes. 7. Instruction by lectures. It is also suggested that 2,500 should be the largest number of names permitted on one physician's panel. At present, popular physicians often have panels exceeding 3,000, with a large private practice in addition. In cases of chronic incapacity it is suggested that certificates by the physician every four weeks should be sufficient. At present they are required every week, and a fair proportion of the physician's office time is occupied in writing certificates.

The Insurance Act

The insurance act is still on its trial, and while no one doubts that it has come to stay, no one doubts that it will be profoundly modified in the future. Even the great preoccupation of the war has not prevented discussion of its merits and demerits. The York medical panel committee has recently adopted an interim report of a subcommittee appointed to consider the working of the act as regards medical benefit which well summarizes the present position as to the advantages to the community and the panel physicians. The gains to the latter are: (1) an income known approximately in advance, which probably but for the war would have enhanced the market value of practices; (2) ease in introducing substitutes in absence from illness or other cause; (3) freedom from dispensing and sending out accounts, and (4) fixed rules for patients. On the other hand, the subcommittee is not sure that the defects of the act do not counterbalance its advantages. Among the minor defects named are limitation of the free choice of physician, owing to the number of physicians who refuse to work the act, and the difficulty patients have in changing their physicians. There are also the disadvantages inherent in any form of contract practice, which tend to make it less efficient than private practice. The physician is irritated by the fact that any complaints against him are dealt with by a lay committee, and also by limitation of the drugs to be prescribed on the grounds of expense. Another defect arises from the multiplication of authorities dealing with health matters. The gain to the community that would arise if the work of public health was brought into relation with the work of the physician is also emphasized. One of the greatest defects is the gap that exists between the treatment of the insured under different circumstances, for instance, when a patient in order to get certain forms of treatment has to be removed from the care of his panel physician to a hospital. The act also breaks down in important directions through failure to provide treatment for much grave disease, facilities for consultation, nursing in serious cases, specialist treatment, anesthetics, and pathologic service. The establishment of a ministry of health to coordinate all the activities of the health authorities, and hospitals staffed by or mainly by panel physicians are advocated.

Marriages

SURG. JOHN SAMUEL BOGGESS, U. S. P. H. S., San Diego, Calif., to Miss Henrietta Wadsworth of Minneapolis, at San Diego, June 19.

LIEUT. EDWARD JOHN DAVIN, M. O. R. C., U. S. Army, New York, to Miss Grace Ayleward of Goshen, N. Y., in New York, June 13.

HARRY JAMES SMITH, M.D., Vacaville, Calif., to Miss Frances Huffman of Petaluma, Calif., at Oakland, Calif., June 17.

STEPHEN WILLIAM HAYES, M.D., to Miss Margaret Agnes Nolan, both of New Bedford, Mass., at New York, June 5.

ISIDORE CHARLES RESHOWER, M.D., New York, to Miss Minna Nannette Strouser of Atlantic City, N. J., June 24.

ROBERT LESTER CRUM, M.D., Hollywood, Los Angeles, to Miss Louise Elizabeth Blondeau of Los Angeles, May 19.

WILLIAM HERBERT MASON, JR., M.D., Murray, Ky., to ORA HANNAH KRESS, M.D., of Takoma Park, Md., June 18.

LIEUT. CHARLES CLIFFORD HAWKE, M. C., Kan. N. G., to Miss Rachel N. Bowling of Winfield, Kan., June 12.

DANIEL DAVIS, M.D., Baltimore, to WILLA MAE FRICKE, M.D., of Rochester, Minn., at Wausau, Wis., May 17.

CHARLES WILLIAM VATES, M.D., Mount Oliver, Pa., to ROSE ELIZABETH STANLEY, M.D., of Oil City, Pa., June 9.

EDWARD L. ROBBINS, M.D., Syracuse, N. Y., to Miss Margaret Theresa Coughlin of Albany, N. Y., June 16.

DANIEL CLEVELAND PATTERSON, M.D., Bridgeport, Conn., to Miss Marian P. Gibney of New York, April 28.

CLARENCE PROCTOR THOMAS, M.D., New York, to Miss Irene Doolittle of Toronto, Ont., in New York, June 9.

STEPHEN W. HAYES, M.D., to Miss Margaret Nolan, both of New Bedford, Mass., in New York, June 7.

FRANK RAYMOND MENNE, M.D., to Miss Aletha Eleanor Messigner, both of Portland, Ore., May 30.

JAMES NORVAL STOOPS, M.D., Scottsbluff, Neb., to Miss Mary Edith Kriess of Kearney, Neb., June 12.

ERL ARMITAGE BABER, M.D., Dayton, Ohio, to Mrs. Irene Angela Miersch of New York, June 8.

JOHN W. CLARK, M.D., Carterville, Mo., to Miss Jessie I. Rowden, at Lakeside, Mo., June 12.

LYMAN FOSTER HUFFMAN, M.D., Cleveland, to Miss Beatrice Swayze of Overland, Ohio, June 16.

LUTHER COURTER SAMPSON, M.D., to Miss Helen Marguerite MacMahon, both of Buffalo, June 2.

WILLIAM HILIARY GUY, M.D., to Miss Ethel Hansbury, both of Philadelphia, June 15.

JOHN B. FRISBEE, M.D., to Miss Marie Gatzmeyer, both of Anaconda, Mont., May 19.

FRED. W. BUCKLEY, M.D., to Miss Louise Sabin, both of Beatrice, Neb., May 23.

THOMAS HENRY LEWIS, M.D., to Mrs. Charles Mair, both of Chicago, June 16.

JAMES HUBERT WEST, M.D., to Miss Rena Richey, both of Cleveland, June 9.

ALLEN JOSEPH HRUBY, M.D., to Miss Sylvia Petrtyl, both of Chicago, May 16.

Deaths

Capt. Paul Fitzsimmons, Medical Director, U. S. Navy (retired), Washington, D. C.; University of Georgia, Augusta, 1869; aged 78; a Fellow of the American Medical Association; a member of the Association of Military Surgeons of the United States; who entered the navy as assistant surgeon, Dec. 19, 1871, and was retired, Feb. 27, 1911, on attaining the age of 62 years, after fifteen years and four months of sea service and twenty years and four months of shore or other duty; surgeon of the *U. S. S. Brooklyn,* during the Spanish-American War, and later fleet surgeon; in charge of the Naval Hospital, Newport; medical officer of the Washington Navy Yard; in command of the Medical Supply Depot, New York, and a member of the Naval Examining and Naval Medical Examining boards, Washington; died in the Washington Naval Hospital, June 11.

Capt. Walter Audubon McClurg, Medical Director, U. S. Navy (retired), Washington, D. C.; Jefferson College, 1872; aged 65; a Fellow of the American Medical Association, and Association of Military Surgeons of the United States; who entered the navy, Feb. 8, 1874, and was retired, Sept. 1, 1908, on his own application after more than thirty years' service, including fourteen years and eleven months of sea service, and eighteen years and three months of shore or other duty; on duty on the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., from 1889 to 1893, and fleet surgeon of the North Atlantic Fleet in 1902 and 1903; died in his apartment in Washington, June 16.

Charles Henry Whitman, M.D., Los Angeles; Bennett Medical College, Chicago, 1886; College of Physicians and Surgeons, Chicago, 1890; aged 62; a Fellow of the American Medical Association, and formerly president of the Los Angeles County Medical Society and Los Angeles County Surgical Society; professor of clinical surgery in the Medical Department of the University of Southern California; formerly a pharmacist; since 1909 superintendent of the Los Angeles County Hospital; died in that institution, June 14, from lobar pneumonia.

Robert Goodloe Harper Hayes, M.D., Bellefonte, Pa.; Jefferson Medical College, 1884; aged 57; a Fellow of the American Medical Association, and a member of the Association of Military Surgeons of the U. S., and for many years secretary of the Center County Medical Society; major and surgeon during the war with Spain; a member of the Bellefonte Board of Health, and founder of the Bellefonte Hospital; one of the most widely known practitioners of central Pennsylvania; died at his home, June 20, from intestinal disease.

Augustus Alphonso Hussey, M.D., Brooklyn; College of Physicians and Surgeons in the City of New York, 1896; aged 45; a Fellow of the American Medical Association; associate visiting obstetrician to the Brooklyn Hospital, and visiting obstetrician and gynecologist to the Brooklyn Hospital Dispensary; consulting obstetrician to the Norwegian Hospital, and visiting physician to the Bushwick Hospital; died suddenly while taking nitrous oxid gas and oxygen for the extraction of a tooth in Brooklyn, June 20.

Herbert Maxon King, M.D., Loomis, N. Y.; New York University, New York, 1887; aged 52; a member of the medical Society of the State of New York; a member of the American Association of Pathologists and Bacteriologists; American Climatologic Association; American Sanatorium Association and National Association for the Study and Prevention of Tuberculosis; a specialist in respiratory diseases; physician to the Loomis Sanatorium; died at Loomis, June 24.

James C. Rutledge, M.D., Detroit; Detroit College of Medicine and Surgery, 1898; aged 46; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society and Association of Military Surgeons of the United States; for three years an acting assistant surgeon in the United States Army, with service in the Philippine Islands; died in the Receiving Hospital, Detroit, June 1, from cerebral hemorrhage.

William Halliday Fraser, M.D., Los Angeles; McGill University, Montreal, 1867; aged 78; formerly a member of the Illinois State Medical Society; a practitioner of La Salle, Ill., from 1871 to 1913; supreme medical examiner and emeritus supreme medical examiner of the Order of Scottish Clans of the United States and Canada since 1897; surgeon to St. Mary's Hospital, La Salle; died in the Clara Barton Hospital, Los Angeles, June 11.

Hugh Walter Blair, M.D., Sheffield, Ala.; Vanderbilt University, Nashville, Tenn., 1885; aged 55; formerly a Fellow of the American Medical Association; a member and once president of the Colbert County Medical Society, 1913; formerly mayor of Sheffield; died, June 12, from a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while despondent on account of family troubles.

Peter Harry Steltz, M.D., Washington, D. C.; University of Pennsylvania, Philadelphia, 1888; aged 48; a Fellow of the American Medical Association; chief surgeon of the Pennsylvania system and medical advisor of the Baltimore and Ohio system at Washington; for twenty years in charge of the hospital at the Washington Union Station; died at his home, June 5, from heart disease.

Franklin Timothy Burke, M.D., New York; Long Island College Hospital, Brooklyn, 1898; aged 47; a member of the Medical Society of the State of New York; a specialist in diseases of the nose and throat, and chief of the staff of the laryngologic clinic of Cornell University Medical College, and assistant instructor in the department of laryngology; died at his home, June 8.

Joseph A. H. Miller, M.D., Princeton, Ky.; University of Louisville, Ky., 1889; aged 57; a Fellow of the American Medical Association and a member of the American Association of Railway Surgeons, and Mississippi Valley Medical Association; health officer of Caldwell County, Ky., and district surgeon of the Illinois Central Railroad; died in Louisville, June 7.

Barton Dwight Skinner, M.D., Greenport, N. Y.; Bellevue Hospital Medical College, 1869; aged 63; a Fellow of the American Medical Association; for thirty-two years treasurer and once president of the Suffolk County Medical Society; visiting physician to the Eastern Long Island Hospital, Greenport; died in that institution, June 23, from disease of the intestines.

David Joseph Cummings, Medora, Ind. (license, Indiana, 1897); aged 71; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association; for nearly half a century health officer of Jackson County; a veteran of the Civil War and a practitioner since 1869; died at his home, May 21, from cerebral hemorrhage.

Richard S. Hill, M.D., Upper Marlboro, Md.; University of Georgetown, Washington, D. C., 1886; aged 53; special agent for the investigation of foreign and domestic markets for the sale of Maryland tobacco; director of the Maryland State Farmer's Institute; formerly a member of the legislature; died at his winter home in Washington, D. C., June 12.

Samuel R. Robinson, M.D., Sturgis, Mich.; Columbus (Ohio) Medical College, 1878; aged 65; a member of the Michigan State Medical Society, and once vice president of the St. Joseph County Medical Society; a specialist in diseases of the eye, ear, nose and throat; died in a hospital in Fort Wayne, June 13, after a surgical operation.

Addison Cornelius Posey, M.D., Hanford, Calif.; Kentucky School of Medicine, Louisville, 1875; aged 68; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; a specialist in diseases of the eye, ear, nose and throat; was found dead in his home, May 31, from heart disease.

Charles Edwin Lones, M.D., Knoxville, Tenn.; Lincoln Memorial University, Knoxville, 1896; aged 41; a member of the Tennessee State Medical Association, and once professor of anatomy in his alma mater; who was injured in an automobile accident near Maryville, Tenn., June 3; died in the Knoxville General Hospital, June 12.

Adrien J. Kirghis, M.D., St. Cloud, Minn.; University of Vermont, Burlington, 1899; aged 41; a Fellow of the American Medical Association, who served in the military division of the armies of France for a year after the outbreak of the war and retired only on account of serious impairment of health; died at his home, May 31.

Stewart Anderson Milliken, M.D., Silver City, N. M.; New York University, New York, 1888; aged 56; formerly a Fellow of the American Medical College and a member of the Association of Military Surgeons of the United States; lieutenant-colonel, M. C., New Mexico National Guard; died in Las Vegas, N. M., April 21.

David W. Horning, M.D., Minneapolis; Chicago Homeopathic Medical College, 1883; aged 65; a member of the Minnesota State Medical Association; lecturer on practice in the Homeopathic Medical College of the University of Minnesota; died at his home, about June 19, from heart disease.

Holmes Mayhew Jernegan, M.D., Boston; New York Homeopathic Medical College, 1869; aged 70; lecturer on surgical anatomy and clinical surgery in the Massachusetts Homeopthic Hospital from 1870 to 1873; for five years professor of surgery in the Boston University School of Medicine; died at his home, May 30.

Edward Stephen Howard, M.D., San Francisco; Jefferson Medical College, 1898; aged 58; formerly chief surgeon of the Municipal Emergency Hospital Service of San Francisco; professor of anatomy in the College of Physicians and Surgeons of San Francisco; died suddenly in his office, June 12, from heart disease.

Leo E. Bennett, M.D., Muskogee, Okla.; University of Tennessee, Nashville, 1883; aged 59; founder of the *Indian Journal* and the *Muskogee Phoenix;* Indian agent from 1899-1893; formerly United States marshal for eastern Oklahoma, and for one term mayor of Muskogee; died in Mineral Wells, Texas, May 28.

Charles Edward Scholl, M.D., Logansport, Ind.; University of Maryland, Baltimore, 1873; aged 74; formerly a member of the Indiana State Medical Association; a Confederate veteran; who was knocked down, June 3, in an altercation regarding a tile drain; died, June 17, from concussion of the brain.

George A. Robertson, M.D., Battle Creek, Mich.; Cleveland University of Medicine and Surgery, 1867; aged 76; formerly president of the state homeopathic medical society; once a member of the board of aldermen and coroner of Calhoun County; died at his home, May 22.

James Williamson Owen, New Bedford, Mass. (license, Massachusetts, 1894); aged 65; a practitioner since 1873; secretary of the British Medical Reform Association for twelve years, and for three years an editor of its official journal; died at his home, June 4.

Alexander McKee, M.D., Glens Falls, N. Y.; Maryland Medical College, Baltimore, 1899; aged 43; a member of the Medical Society of the State of New York; milk and food inspector for Glens Falls; died at the home of his sister in Hudson Falls, N. Y., June 11.

Nathaniel Clark Bacon Haviland, M.D., Worcester, Mass.; University of Vermont, Burlington, 1878; aged 62; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home, April 22, from cardiorenal disease.

Harry Eldridge Williams, M.D., Coatesville, Pa.; Homeopathic Medical College of Pennsylvania, Philadelphia, 1866; aged 77; for twenty-nine years secretary of the school board and school director; a veteran of the Civil War; died suddenly at his home, June 9.

Thomas J. Nolan, M.D., Snyder, Neb.; John A. Creighton Medical College, Omaha, 1903; aged 43; a member of the Nebraska State Medical Association; died in St. Joseph's Hospital, Omaha, May 23, from peritonitis following an operation for cholecystitis.

Albert R. Ayres, M.D., Hannibal, Mo.; St. Louis College of Physicians and Surgeons, 1870; aged 75; hospital steward and later captain and assistant surgeon of volunteers during the Civil War; for many years a druggist of Hannibal; died at his home, May 29.

Adolph Matthew Evetz, M.D., Carroll, Iowa; St. Louis University, 1910; aged 33; a member of the Iowa State Medical Society; formerly intern in St. Anthony's Hospital, Carroll; was crushed and instantly killed in an elevator in that institution, June 15.

Louis Sanford Sweitzer, M.D., Akron, Ohio; Western Reserve University, Cleveland, 1875; aged 67; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association; died in Los Angeles, June 21.

Joshua M. Eisenbise, M.D., Quinter, Kan.; University Medical College, Kansas City, Mo., 1900; aged 50; a member of the Kansas Medical Society; died suddenly in the Bethany Hospital, Kansas City, Kan., recently, after a surgical operation.

William Bell Hunn, M.D., Junction City, Ky.; Kentucky School of Medicine, Louisville, 1893; aged 46; was instantly killed, May 19, when a revolver fell from the pocket of his coat and was discharged, the bullet striking him in the chest.

Edward James Cook, M.D., Buffalo; Niagara University, Buffalo, 1895; aged 75; a member of the Medical Society of the State of New York; for twenty-six years a clergyman of the Methodist Episcopal Church; died at his home, June 7.

Theodore H. Wells, M.D., Albuquerque, N. M.; Hospital College of Medicine, Louisville, Ky., 1878; aged 65; for many years physician of Bernalillo County and a druggist and postmaster of Old Albuquerque; died at his home, June 15.

Nelson Horatio Lowry, M.D., Woodhull, Ill.; Hahnemann Medical College, Chicago, 1872; aged 70; for half a century a practitioner of Woodhull; a veteran of the Civil War; died at his home, May 22, from cerebral homorrhage.

George Andrew Matthews, M.D., Anniston, Ala.; University of Michigan, Ann Arbor, 1869; aged 67; formerly a member of the Medical Association of the State of Alabama; died at his home, May 12, from carcinoma of the liver.

Elmer Orren Miller, M.D., Aberdeen, S. D.; Starling Medical College, Ohio, 1895; aged 54; a Fellow of the American Medical Association; died in St. Luke's Hospital, Aberdeen, June 16, from cerebral hemorrhage.

Thomas E. Sawyer, M.D., Uba, Tenn.; University of Tennessee, Nashville, 1906; aged 44; a member of the Tennessee State Medical Association; died suddenly on a passenger train at Greenfield, Tenn., June 7.

Volney E. Tygret, M.D., Bowling Green, Ky.; Vanderbilt University, Nashville, Tenn., 1882; aged 59; formerly a member of the Kentucky State Medical Association; died at his home, June 1, from heart disease.

John Byron Robinson, M.D., Brooklyn, Md.; University of Maryland, Baltimore, 1862; aged 81; for nearly half a century a practitioner of Anne Arundel County; died, June 2, in Johns Hopkins Hospital, Baltimore.

Moses Alfred McDonald, M.D., Whitesville, Ky.; Louisville (Ky.) Medical College, 1883; aged 61; a Fellow of the American Medical Association; died at his home, May 18, from pulmonary tuberculosis.

William Fink Marks, M.D., Reading, Pa.; Hahnemann Medical College, Philadelphia, 1869; aged 71; for many years president of the board of health of Reading; died at his home, June 4, from cardiac asthma.

Charles Francis Haugh, M.D., Delphi, Ind.; Medical College of Indiana, Indianapolis, 1905; aged 35; who retired from practice after two years to go into business; died at his home, May 30, from heart disease.

Patrick F. Griffin, M.D., Honesdale, Pa.; Jefferson Medical College, 1886; aged 53; a Fellow of the American Medical Association; died suddenly from heart disease, May 27, while making a professional call.

Lawrence Wilbur Campbell, M.D., Ada, Ohio; Rush Medical College, 1881; aged 60; a Fellow of the American Medical Association; formerly mayor of Ada; died at his home, June 11, from nephritis.

Henry A. Record, M.D., Forestville, N. Y.; Hahnemann Medical College, Philadelphia, 1865; for forty years a practitioner of Chautauqua County; died at his home, April 22, from heart disease.

James H. Rainwater, M.D., New Canton, Ill.; Missouri Medical College, St. Louis, 1889; aged 58; a Fellow of the American Medical Association; died at his home, May 13, from pneumonia.

Charles A. Dunn, Cannelville, Ohio (license, Ohio, 1896); aged 62; for thirty-eight years a practitioner of Muskingum County; died in the Good Samaritan Hospital, Zanesville, Ohio, April 21.

Adelbert E. Moody, M.D., St. Regis Falls, N. Y.; Albany (N. Y.) Medical College, 1885; a Fellow of the American Medical Association; died in Cornwall, Ont., April 22, from typhoid fever.

Mentor V. Richard, M.D., Pearl River, La.; Tulane University, New Orleans, 1882; aged 56; for many years coroner of New Orleans; died at his home, May 31, from acute gastritis.

Jervis H. Wattles, M.D., Battle Creek, Mich.; Western Reserve University, Cleveland, 1886; aged 76; for nearly half a century a practitioner of Battle Creek; died at his home, May 18.

Andrew J. McLaughlin, M.D., Aldrich, Mo.; Marion-Sims Medical College, St. Louis, 1892; aged 63; formerly a member of Missouri State Medical Association; died at his home, May 17.

Charles Benjamin Knowlton, M.D., Buffalo; University of Buffalo, 1872; aged 82; for many years instructor in penmanship in the public schools of Buffalo; died at his home, May 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

CREOSOTE-DELSON AND CREOFOS

Report of the Council on Pharmacy and Chemistry

Creosote-Delson and Creofos, or Creosote with Hypophosphites, were submitted by the Delson Chemical Co., Inc., New York City. Creosote-Delson is said to be "beechwood creosote from which the irritating and caustic properties are removed by fractional distillation." It is claimed that Creofos contains "2 grains of Creosote-Delson and 3⅗ grains of the combined Hypophosphites in each fluidrachm of the mixture or emulsion, the lime salt predominating." It is also claimed that "the primary object of the hypophosphites in this preparation is that of maintaining the refined creosote in a pure, unoxidized state, and that no particular claim for therapeutic action on their part is advanced." It is explained further, however, "the addition of the lime was prompted by the belief . . . that the fundamental cause of pulmonary tuberculosis is lime starvation . . ."

The assertions are made that Creosote-Delson is superior to the official creosote because it can be taken "abundantly and persistently without harm to or interference with stomach and kidneys" and can be "taken uninterruptedly and indefinitely," while the dosage is "unlimited by any former knowledge of Creosote Therapy." Creosote-Delson is not on the market except in the combination Creofos, although it is supplied on request.

Creofos is advised in the treatment of tuberculosis, whooping cough, measles, "Grippe and Colds," bronchitis, asthma, "Intestinal Affections (Colitis, Summer Diarrhoea, etc.)," while its use is suggested for the "prevention of the spread of contagious diseases," and for "preventing contagion, in minor contagious diseases at any rate, in schools and families."

The following advertisement has recently appeared in the *New York Medical Journal* and in the *Therapeutic Gazette:*

CREOFOS MEDICATION

is the successful development of the most advanced practice in the treatment of infectious diseases. It destroys completely the causative organisms by a bactericide many times more powerful than phenol, yet absolutely harmless to animal life.

Unlike serums, its activity is not confined to any specific disease, and its use insures against sequelae (as pneumonia following grippe).

Especially valuable in the treatment of infants and patients of delicate constitution and in cases where time is of importance.

The Delson Chemical Co. was requested to supply information regarding the identity of Creosote-Delson and to support the claim that although it is "the whole drug" its dosage is "unlimited by any former knowledge of Creosote Therapy." The reply was virtually an admission that the toxic, caustic, phenolic components of creosote were present in Creosote-Delson just as in the official creosote.

The referee of the Committee on Therapeutics in submitting his report to the Council pointed out that it is difficult to discuss the pharmacologic merits of a semi-secret preparation, like Creosote-Delson, claimed to be more acceptable to the human organism than the official product it is intended to supplant, when the action of the parent drug is still questioned or disputed by eminent clinicians.

Absorption experiments have been carried out with creosote and creosote compounds such as creosote with hypophosphites or calcium or creosote carbonate chiefly by a study of the elimination products in the urine. But any evidence so far offered that these combinations increase absorption and lessen the irritating, caustic or toxic properties has been wholly inconclusive. The evidence offered by the Delson Chemical Co. presented no control experiments with the official creosote and did not prove that either Creosote-Delson or Creofos was less toxic than a corresponding amount of ordinary beechwood creosote.

The referee concluded that no proof had been offered that these preparations are materially superior to ordinary creosote preparations from the pharmacologic or therapeutic standpoint, and that the claims made for Creosote-Delson and Creofos are unwarranted in the light of our knowledge of the properties of creosote. The advertisement quoted above is an example of unproved and unwarranted claims.

On the recommendation of the referee the Council declared Creosote-Delson and Creofos inadmissible to New and Nonofficial Remedies for conflict with the rules as follows:

Creosote-Delson: The information so far available is not sufficient to define the nature, or composition, of Creosote-Delson, or to indicate in how far this product differs, if at all, from the official creosote (conflict with Rule 1). No methods are furnished for determining the identity or composition of Creosote-Delson (conflict with Rule 2). The available information does not show that Creosote-Delson has advantages over creosote (conflict with Rule 6).

Creofos: The composition of Creosote-Delson not having been furnished, the statement concerning the composition of Creofos is also unsatisfactory (conflict with Rule 1). The therapeutic claims are unsubstantiated and grossly exaggerated (conflict with Rule 6). The name is not descriptive of its composition as is required for pharmaceutical mixtures (conflict with Rule 8). There is no evidence that hypophosphites prevent decomposition of creosote (if this occurs). Hence the inclusion of hypophosphites must be considered irrational (conflict with Rule 10).

The Council's report was sent to the Delson Chemical Co. for consideration. The firm's reply contained nothing to warrant a revision of the report and the Council voted that Creosote-Delson and Creofos were inadmissible to New and Nonofficial Remedies and authorized the publication of this report.

SOME MISBRANDED NOSTRUMS*

"Quaker Herb Extract," "Payne's New Discovery," "Payne Quick Relief" and "Quaker Oil of Balm."—These four products were sold by the Quaker Herb Co., Cincinnati, Ohio.

ANOTHER MONSTER PARASITE OVER SIXTY FEET LONG

Martin Krekeler's Life Was Saved by Quaker Herb Extract—He Had Suffered Nearly Four Years, Taken Medicine of All Kinds; He Kept Growing Worse and Had Begun to Lose Hopes of Living—To-day He is in Perfect Health, Due Entirely to "Quaker."

The "Quaker Herb Extract," according to the federal chemists, was essentially a water-alcohol extract of an emodin-bearing cathartic drug. The alcohol strength was 18 per cent. It was sold as a cure for catarrh and grip, a preventive of rheumatism, kidney and bladder troubles and scrofula, malaria and various other conditions. These claims were declared false and fraudulent. "Payne's New Discovery" contained over 18 per cent. alcohol and, according to the federal chemists was a water-alcohol solution containing small amounts

* This material, with much additional, appears in the new edition of the pamphlet "Convictions," price fifteen cents.

of baking soda, licorice and extractive matter from a laxative plant drug. While the label declared the stuff was not a cure-all it was said to be a germ eradicator and a cure for catarrh and rheumatism, a remedy for all nervous disorders, a cure for gout and sciatica, a specific for malaria, a remedy for grip and falling of the womb, and a number of other conditions. These claims were naturally declared false and fraudulent. "Payne Quick Relief" was chiefly turpentine with cayenne pepper, resin, camphor and chloroform present. It was claimed to be a cure for cholera infantum and an effective relief for pleurisy, dysentery, cholera morbus and deafness. The claims were declared false and fraudulent. "Quaker Oil of Balm" seems to have been from the federal chemists' report virtually the same as the "Quick Relief," viz., turpentine, cayenne pepper, chloroform, etc. The claims made for it, which were very similar to those made for the "Quick Relief," were declared false and fraudulent. The company would neither affirm nor deny its guilt but entered a plea of *nolo contendere* and was fined $100 and costs.—[*Notice of Judgment No. 4474.*]

"Cooper's New Discovery" and "Cooper's Quick Relief."—The Cooper Medicine Company, Dayton, Ohio, sold these two products both of which were declared misbranded under the Food and Drugs Act. The "New Discovery" was a nostrum of the alcoholic-tonic type. Federal chemists reported that it contained 20 per cent. alcohol, some emodin, aloes and a small quantity of oil of sassafras together with reducing sugars. The claim that it was an effective treatment for diseases of the kidneys, scrofula, so-called blood diseases, gout, diabetes, and many other conditions was declared recklessly and wantonly false and fraudulent. The "Quick Relief" was a liniment consisting of cayenne pepper in alcohol (31 per cent.) flavored with oil of sassafras. The claim that it would afford instant relief to sprains and pain and was a remedy for croup, and effective for preventing injuries due to burns and scalds from becoming inflamed was declared false and fraudulent. The company pleaded guilty and was fined $50 and costs.—[*Notice of Judgment No. 4460.*]

Wilson's Preparation.—Herman L. Davis traded under the name "General Agent for Wilson's Remedy, New York," and sold a product called "Wilson's Preparation."[1] It was sold as an effective remedy for consumption, asthma and all lung and throat maladies. Government chemists reported that Wilson's Preparation was a powder consisting largely of starch, acacia and sugar with potassium acetate, calcium hypophosphite and quinin. The therapeutic claims were, naturally, declared false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. Davis pleaded guilty and was fined $25.—[*Notice of Judgment No. 4480.*]

1. This same fraud used to be sold as "The Wilson Consumption Cure" and purported to be a wonderful prescription of the Rev. Edward A. Wilson. Post office authorities put the Wilson Consumption Cure out of business by denying it the use of the mails. The matter is dealt with in the pamphlet "Consumption Cures" (price 20 cents) published by the American Medical Association.

Visualization.—A catfish depends 95 per cent. on its taste barbels, or feelers, for knowledge; an eagle on its eyes; a hound on its nose; a blind man chiefly on touch. A soundly sense-organed man gathers knowledge through all his five senses, but he gets a greater impress through his eyes—through visualization—than through all the other four senses. Although the teaching of disease prevention and accident injury is the most important in life's curriculum, yet they are the most difficult to visualize because their demonstration is in the form of a negative.—E. A. Ayers, M.D., *Public Health News*, New Jersey

Correspondence

TUBERCULOSIS AND WAR

To the Editor:—An article on this subject by Dr. Maurice Fishberg (THE JOURNAL, June 16, 1917, p. 1791) deserves serious consideration, first, on account of the tremendous importance of the subject and, secondly, because careful analysis of the article gives the reader a different impression from that gained at first glance. I am inclined to believe that Dr. Fishberg had no intention of conveying the ideas that have been gained by at least a considerable percentage of those who have read this article.

My attention was first called to Dr. Fishberg's paper through a letter from a prominent physician engaged in military medical work, saying that Dr. Fishberg's article had given him the impression that tuberculosis among soldiers need not be seriously considered.

I searched the article for such a statement, but radical as Dr. Fishberg is in his opinions, I could find no such utterance. In his recapitulation, however, I found the unfortunate expression, "The problem of tuberculous infection of soldiers need not be considered seriously." I am quite certain that Dr. Fishberg did not anticipate the broad interpretation which might be given to this sentence. It is quite clear from the context that he intended to convey the idea that tuberculosis *acquired through infection of healthy persons* engaged in military service need not occasion any great amount of apprehension or concern. He did not mean, as I take it, that tuberculosis among soldiers is not a matter for most serious consideration. In fact, he supports his contention with the assertion that "in the vast majority of tuberculous cases discovered among the soldiers, it was ascertained that they had been affected with the disease before enlistment." It is this lighting up of preexisting tuberculosis among the thousands who have been previously infected and not the new infection of healthy soldiers which is now occasioning concern.

The impression that one gains from Dr. Fishberg's entire article, however, is that he is attempting to negate the generally accepted belief that tuberculosis constitutes one of the most serious problems of the present war.

As I see it, Dr. Fishberg's contentions, which he supports with extensive citations of current literature, are these:

1. Certain tuberculous individuals do not break down under the strain of military service.

2. Certain exceptional tuberculous individuals actually improve in physical condition during military service.

3. Reactivation of former tuberculosis is no greater in military service than in civil life with similar physical demands.

4. On account of the foregoing facts, recruits should not be rejected on account of previous tuberculosis or previous sanatorium treatment unless showing evidences of acute tuberculous disease.

5. New tuberculous infection of healthy individuals in the army is not sufficiently frequent to occasion serious concern.

6. The incidence of tuberculosis in the civil population of France, Germany, Russia, England, Italy and other warring nations is no greater than in times of peace.

His first and second contentions are not questioned by any one familiar with tuberculosis. In private practice, we occasionally meet tuberculous persons, even those with bacilli in the sputum and showing other evidences of active disease, who are able to meet heavy physical demands; and occasionally we come on a patient who appears to improve on account of or in spite of great physical activity. The vast majority of tuberculous persons, however, break down under strain and, so far as I know, we cannot differentiate exceptional individuals from their fellows. Dr. Fishberg quotes Banks to the effect that of sixty-four tuberculous persons enlisted in the army and navy, nineteen engaged in active service for an unstated period of time without breaking down, although one of the nineteen had "broken down temporarily."

While it is interesting and surprising that as many as 30 per cent. of these men could stand active military service, it is more important that over 70 per cent. of those who were

apparently well enough to be accepted in the army broke down on account of their tuberculous condition.

His third contention, while open to some question as to fact, is not sufficient to sustain his fourth contention: That is, because reactivation of dormant tuberculosis is no more frequent in military service than in civil life, previous tuberculosis should not serve as a bar to enlistment.

The reactivation of tuberculosis in civil life among those who have ever been sick with the disease is so great that no one would consider accepting a group of men formerly tuberculous for any important duty involving physical strain. The policy of all nations has been to select, for military service, men who are physically most fit. At the present time, in recruiting an army of 1,000,000 or a subsequent army of 2,000,000, there is not the slightest occasion for the United States to accept cripples of any kind. We have at hand 10,000,000 men between the ages of 21 and 31 and 17,000,000 more over 18 and under 45, the ages which some of the warring nations now accept as the limits of liability to military service. However the experience of civil life may compare with that of military service, every tuberculous person or previously tuberculous person enlisted is a weak link in the army, regardless of the apparent condition of the individual, and is a probable added financial burden to the nation.

Dr. Fishberg lays stress on certain quotations from Dr. William Osler and on the fact that discharged sanatorium patients have been accepted in the German army. England, with half our population, is maintaining an army of 5,000,000 men. Our army, to be relatively as large as that of England, would have to contain 10,000,000 men. If we should be compelled to draft an army of such proportions, and if fighting men became difficult to obtain, we can imagine even the most conservative of American physicians advocating the enlistment of those who give only moderate promise of being able to render any sort of military service. We have not reached that place as yet, and I am under the impression that Dr. Osler at the present time would not advocate the acceptance in the American army of a single individual who was formerly tuberculous.

As to the acceptance of tuberculous persons in the German army, this is not convincing to many of us. Germany seems determined to win the war at all costs. Humane considerations have been ruthlessly swept away to attain this end. The nature of the war is such that it has become necessary at times to deliberately sacrifice thousands of lives in a battle for the purpose of carrying out some strategic point. Men who are able to serve in critical positions for a few days or hours may answer the purpose for such sacrifice, and thereby could save that many able bodied men to the empire.

The voluminous quotations employed by Dr. Fishberg do not controvert the fact that persons as physically unreliable as former tuberculous patients, as a class, are wholly unsuited for military service, and should not be accepted so long as able-bodied men may be obtained, and this in spite of the fact that certain rare tuberculous individuals survive the ordeals of war or that reactivation is no more likely in military service than in civil life.

The fifth contention, that tuberculous infection of healthy recruits in military service is not sufficiently frequent to cause grave apprehension, will create no particular discussion. The doctrines that primary infection usually occurs in childhood and that tuberculosis is less infectious among adults than previously believed are now quite generally accepted. This contention does not materially affect the seriousness of the tuberculosis war problem.

The sixth contention of Dr. Fishberg is purely a question of fact. The statement that the incidence of tuberculosis in the civil population is no greater in France during the war than it was previous to the war seems to be supported to Dr. Fishberg's satisfaction. On the other hand, Dr. Hermann Biggs, who has studied the situation at first hand, gives very convincing testimony exactly to the contrary. As to this point, it is perhaps fairest to say that for the time being we can merely accept a Scotch verdict.

My chief object in discussing this paper of Dr. Fishberg's is to impress the hasty or careless reader that only to a very limited extent does the author successfully take issue with the fact that tuberculosis is one of the most important problems in the present war.

George Thomas Palmer, M.D., Springfield, Ill.

THE BACTERIOLOGY OF FOODS

To the Editor:—Referring to Prof. Edwin O. Jordan's article on this subject (The Journal, April 14, 1917, p. 1080), we wish to take issue with him in relation to the bacteriological examination of milk. Health departments and milk inspectors in their endeavor to ensure a pure milk supply to the public have received great aid from bacterial counts. The more efficient and intelligent dairymen also appreciate the value of such tests, and milk supplies of many cities have been improved and infant mortality lessened through the active cooperation of civic officials and producers in the employment of bacteriological methods and their practical application.

The arguments advanced by Professor Jordan are the arguments of the inefficient dairymen and their apologists, refined, it is true, marshaled by a keen mind, but still the same old plea against enforcement of fair and reasonable bacterial regulations for the production and handling of this important food product. This is so much a fact that, whenever in courts of law, action is brought against careless producers or handlers of milk, the defense quotes articles similar to this one by Professor Jordan, and the tendency of such articles is to nullify the good work which has been done.

We do Professor Jordan the justice to believe that in his pursuit of an idea he overlooked this practical and unhappy application. We believe the following statement made by him to be entirely unwarranted by any proof adduced in his article:

> Large numbers of milk bacteria, irrespective of kind, in themselves and without reference to their sanitary implications, have never been shown to be definitely injurious.

This flat and unsupported dictum is so at variance with the opinions of many others that we, as officials engaged in enforcing bacterial limit regulations, feel that attention should be called to its tendency to create a false impression, and we desire also to present briefly what we believe to represent the actual conditions, which are admirably set forth in the following abstract from the "Third Report of the Commission on Milk Standards" (*Public Health Reports*, Feb. 16, 1917):

> Relation of Large Numbers of Bacteria to Infant Mortality.—The Commission believes that the numbers of bacteria in milk have a relation to the infant mortality, for the following reasons:
>
> (*a*) Evidence furnished by clinical observations of groups of children fed on milk containing small numbers of bacteria and large numbers of bacteria shows a higher death rate in the latter than in the former.
>
> (*b*) In general, a reduction in infant mortality in cities results from a substitution of milk containing small numbers of bacteria for milk containing large numbers of bacteria.
>
> (*c*) Bacteria causing no specific intestinal infections in adults may cause infant diarrhea, and milk containing large numbers of bacteria more often contains species capable of setting up intestinal inflammation in infants than milk containing small numbers of bacteria.

In the membership list of the New York Milk Committee appear the names of eight public health officers, seven bacteriologists, three chemists, and two agricultural experts. Thirteen of the number have been educated as physicians; two of the members have had long practical experience in the milk industry; six have been connected with the production and control of certified milk.

So far as we are aware, the only practical research of this kind was that of Drs. William H. Park and L. Emmett Holt, of which account was given in their article, "Report upon the Results with Different Kinds of Pure and Impure Milk in Infant Feeding in Tenement Houses and Institutions of New York City: A Clinical and Bacteriological Study" (*Archives of Pediatrics*, December, 1903).

Quotations from this article appear in the fourth edition of Professor Jordan's "Text-Book of General Bacteriology," page 540, as follows:

> Park and Holt, as the result of a comprehensive study of the relation between milk-supply and infantile diarrhea in New York City,

reached the conclusion that "no special varieties of bacteria were found in unheated milk which seemed to have any special importance in relation to the summer diarrhea of children." While it is therefore perhaps premature to assign a uniform bacterial cause for every case of infantile diarrhea or to attempt to differentiate between different causes, there can be no doubt as to the influence of the numbers of bacteria in milk. The most conclusive investigations on this point are those of Park and Holt. These observers found that during hot weather the effect of bacterial contamination on the health of infants was very marked when milk was fed without previous heating. "When milk is taken raw, the fewer the bacteria present the better the results. Of the usual varieties, over 1,000,000 bacteria per cubic centimeter are certainly deleterious to the average infant."

Writing to one of us ten years after the publication of this article, Dr. Holt says:

> I still believe, even more strongly than when the article to which you referred was published, that "of the usual varieties of bacteria found in milk, over one million per c.c. are deleterious to the average infant."

Again, after a table showing the difference in bacterial content of milk carefully collected and cared for as compared with ordinary milk, Jordan ("Text-Book of General Bacteriology," p. 535) says:

> Many such figures might be cited, but they all lead to the same conclusion: namely, that the number of bacteria in milk depends chiefly—(1) upon the degree of original contamination of the milk, (2) upon the age of the milk, and (3) upon the temperature at which it has been kept. In other words, the bacterial count gives valuable information both as to the cleanliness and staleness of this indispensable food.

With this statement of Professor Jordan's we are in complete accord, and on such a basis bacteriologists of various cities have worked and have brought about marked improvement in milk supplies.

FRANCIS H. SLACK, M.D., Boston.
Deputy Health Commissioner; Former Chairman, Committee on Bacterial Milk Analysis, American Public Health Association.

GEORGE E. BOLLING, Brockton, Mass.
City Bacteriologist; Chairman of Committee on Methods of Bacterial Analyses of Milk and Milk Products and the Interpretation of Results, International Association of Dairy and Milk Inspectors.

This letter was referred to Professor Jordan, who replies:

To the Editor:—It is difficult even with careful phrasing to avoid expressions that, when taken from their context, may be liable to misinterpretation. I had supposed that the statement to which exception is taken was sufficiently guarded to prevent all misunderstanding. Certainly the general tenor of my address is in no wise antagonistic to the proper use of bacterial counts in controlling public milk supplies. My own position in this matter is generally known, as is shown indeed by the quotation from my book cited in the foregoing letter. Let me state once more specifically and emphatically that I believe that bacterial milk counts are a valuable aid in controlling the quality of milk supplies and that their application by municipal authorities has helped to bring about a great improvement in the public milk supplies of American cities.

A certain discrimination on the part of readers as well as writers seems desirable. If attention is drawn to the fact that sometimes some observers have placed undue weight on colony counts in judging the sanitary quality of a milk, this ought not to be taken as the personal opinion of the writer that colony counts should have no weight.

With regard to the particular sentence to which objection is made, it is not quite clear why I should be asked to give proof of what seems to me a lack of evidence or what the nature of such "proof" would be. Keeping in mind the qualifications as I have stated them, the sentence even isolated from the text has ample warrant in the present state of our knowledge. I do not know of any evidence that shows that milk containing 1,000,000 *B. subtilis* is any more or any less injurious than milk containing 1,000,000 *B. coli* or 1,000,000 lactic acid bacilli or 1,000,000 streptococci or a mixture of all four. For this reason I was careful to use the phrase "irrespective of kind." Let me not be misunderstood. In thus pointing out the lack of evidence for distinction I am not expressing an opinion that there is no distinction. Many investigators have commented on this lack of evidence. One opinion by a competent authority which is at hand may be cited: "The hypothesis that the ordinary saprophytic germs of milk produce disease and death in infants is singularly lacking in experimental confirmation" (Schereschewsky, J. W.: "Heat and Infant Mortality," Transactions of the Fourth Annual Meeting, American Association for Study and Prevention of Infant Mortality, 1913, p. 113).

In the body of my article on the "Bacteriology of Foods" I have shown that in practice bacterial milk counts are today interpreted differently according to conditions, in large and small cities, in raw and pasteurized milk, etc. In other words, the validity of the very statement objected to by my critics is recognized in some places in official regulations. The important work of Park and Holt cited above constitutes in no sense a contradiction of my position. Their observations on the connection of high numbers of bacteria with the health of infants relate to the bacteria of ordinary raw market milk. For obvious reasons no distinction was made in this study between the bacteria themselves and the bacterial products that had accumulated in the milk. It was plainly quite impossible to differentiate between the kinds of bacteria present in each feeding. The fact that a correlation between numbers and effect existed in their series of observations is no proof at all that the effect was due solely to the numbers.

One further question may be asked: Are we justified in concluding that large numbers of bacteria in ordinary unheated market milk and in pasteurized or certified milk that has been kept for some days at a low temperature possess exactly the same sanitary significance? What I have called the "sanitary implications" are certainly different in these three cases. A sanitarian might be pardoned for preferring a properly pasteurized milk that had been kept in his own clean ice-box for several days to ordinary raw market milk even if the latter had fewer bacteria. Have we as a matter of fact any evidence that numbers, irrespective of kind, in themselves and without reference to their sanitary implications are definitely injurious? If so what and where is it?

I may say, finally, that the argument that we should refrain from discussing vexed questions before scientific societies and in scientific journals because of the possible effect such discussions may have on public opinion has never appealed to me. Educated opinion in the long run is more likely to be influenced in an undesirable way by the attempt to conceal the deficiencies and shortcomings of our scientific knowledge. It is certainly unfortunate that the lack of convincing evidence can be used as an argument to bolster up a bad cause; it would be much more unfortunate if scientific men generally asserted that there was evidence when there was none and maintained that a working hypothesis was the same as a demonstrated fact.

EDWIN O. JORDAN, PH.D., Professor of Bacteriology,
University of Chicago, Chicago.

FOOD REQUIREMENTS OF CHILDREN

To the Editor:—In THE JOURNAL, June 9, 1917, the first editorial is relative to "Food Requirements of Healthy Children." You seem to agree with Dr. Lucy Gillett in her figures as to their needs. You make no reference to your editorial of Sept. 9, 1916, p. 814. In this Dr. Du Bois, of Russell Sage Foundation, seems to find a far larger amount needed for healthy athletic boys from 13 to 16 years of age than Dr. Gillett mentions for the same ages. It occurred to me that some of your readers would more likely have a more correct view if you would endeavor to correlate the two articles.

JOSEPH J. MACGOWAN, M.D., Heth, Ark.

[COMMENT.—In our earlier editorial we quoted the finding of Du Bois that the basal requirement of boys in metabolism is 25 per cent. above that of the adult. We also cited the statistics of Gephart indicating that the total fuel intake of a group of 300 boys from 13 to 16 years of age in a large boarding school was three times that of the basal level of from 1,700 to 1,800 calories. These figures were based on statistics computed on the basis of the meals served. The upshot of the evidence was that growing athletic boys are

apparently not content with the conventional 3,000 calories per day. Gillett's estimates were based on a larger variety of statistics obtained in different ways. The sources of reliable information for the food needs of children at the ages considered are admittedly scanty. Being considered from the standpoint of the needs of the average child among the less well-to-do classes, Gillett's compilations doubtless represent lower limits rather than maximum or even optimum data. Even so, a diet yielding up to 3,300 calories per day for 16 year old boys is suggested. Our correspondent does well to call attention to these discrepancies because they illustrate how much more ought to be known about the food requirements of children at all ages so that blunders will not be made in the requisitioning of supplies for them when emergencies arise.—ED.]

VENARSEN

To the Editor:—The following is a copy of a letter sent to the Intravenous Products Company, which needs no explanation:

June 8, 1917.

The Intravenous Products Co., Denver, Colo.

Gentlemen:—In reply to your circular letter under date of June 3, may I say that after using a great quantity of Venarsen both in clinical and private cases, I can see no more effect upon these cases than if so much water had been administered.

This is also the report of Don R. Black, pathologist for Bell Memorial Hospital, University of Kansas. In our experiments all bloods were tested before and after each administration of this product.

WILLIAM A. WILSON, M.D., Kansas City, Mo.

AMBULANCE DRIVING NOT "AN OLD MAN'S JOB"

To the Editor:—The Chicago *Tribune* editor who says that driving an ambulance on European battlefields is "an old man's job" presumably intends to leave *his* job in the hands of an older and wiser man while he goes to the front to demonstrate his heroism behind earth works, forgetting that ambulance drivers have to work in the open.

He says:

"Driving an ambulance is an old man's job. It requires little strength, no great endurance, and the danger is small. No young man, fit for military duty, can afford at this time to join the ambulance corps. He owes it to his country to get into the fighting ranks, but he also owes it to himself to avoid the appearance of being a slacker. The ignominy of staying behind with nurses while his companions are fighting in the trenches will be great, and it ought to be great. We realize that many young men have previously joined the service in good faith, but the time has come when such enlistments will be regarded as an alibi to escape military duty. There are plenty of men past military age who are capable of driving the ambulances."

He forgets that the men he insultingly calls "slackers" have been risking and losing their lives in one of the most important branches of the country's service while he has been getting ready to do something.

Having the facts, can't you enlighten him in regard to the records of the service which he so tactlessly and unjustly disparages? S. W. WILLIAMS, Chicago.

PRESERVING RUBBER GOODS

To the Editor:—Some years ago, English surgeons in India found that if rubber goods were kept in a closed receptacle containing a small quantity of oil they were kept soft and pliable. A suitable receptacle can be made by taking a tin bread box with a close fitting lid. A tinsmith can fit into it one or two perforated trays, the lower one sufficiently high to prevent oil from touching it. In India a 5 gallon oil tin answers for the bread box. In the bottom of the box a few spoonfuls of kerosene oil, just enough to cover the bottom, are placed, and then the trays for the rubber are put in. The box should be marked, "Do not shake." I have used the oil method, and know that rubber apparatus so cared for has a period of usefulness much longer than usual.

ANNIE YOUNG, M.D., Philadelphia.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 9. Chairman, Dr. S. W. Welch, Montgomery.

CONNECTICUT: Regular: New Haven, July 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

CONNECTICUT: Eclectic: New Haven, July 10. Chairman, Dr. John W. Fyfe, Saugatuck.

CONNECTICUT: Homeopathic: New Haven, July 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, July 10-12. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

MASSACHUSETTS: Boston, July 10-12. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

NEW MEXICO: Santa Fe, July 9. Sec., Dr. R. K. McClanahan, U. S. Naval Hospital, Las Animas, Colorado.

OKLAHOMA: Oklahoma City, July 10-11. Sec., Dr. R. V. Smith, Tulsa.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 10-12. Sec., Mr. Nathan C. Schaeffer, State Capitol, Harrisburg.

SOUTH DAKOTA: Deadwood, July 10. Sec., Dr. Park B. Jenkins, Waubay.

VERMONT: Burlington, July 10-12. Sec., Dr. W. Scott Nay, Underhill.

WEST VIRGINIA: Charleston, July 10. Sec., Dr. S. L. Jepson, Capitol Bldg., Charleston.

Higher Requirements in New York

An official report states that the New York Board of Regents, after Jan. 1, 1918, will require for admission to medical schools, in addition to a four-year high school education, two years of collegiate work (sixty semester hours), which shall include courses in physics, chemistry, biology, English, and a modern foreign language (French, German, Italian or Spanish). This is the twenty-third state to adopt this higher requirement. The complete list of states and the dates when the requirement became or becomes effective is as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Graduates
Alabama	2	1915-16	1919
Alaska	2	1918-19	1922
Arizona	2	1918-19	1922
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Kansas	2	1918-19	1922
Louisiana	2	1918-19	1922
Maryland	2	1918-19	1922
Minnesota	2	1908-09	1912
Montana	2	1918-19	1922
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
New Mexico	2	1918-19	1922
New York	2	1918-19	1922
North Dakota	2	1908-09	1912
Oklahoma	2	1917-18	1921
Rhode Island	2	1918-19	1922
South Carolina	2	1918-19	1922
South Dakota	2	1911-12	1915
Virginia	2	1917-18	1921
Washington	2	1918-19	1922
Wisconsin	2	1915-16	1919

Missouri March Examination

Dr. George H. Jones, secretary of the Missouri State Board of Health, reports the oral and written examination held at St. Louis, March 26-28, 1917. The examination covered 14 subjects and included 100 questions. The percentage required to pass was 75. Fifteen candidates were examined, of whom 14 passed and 1 failed. Three candidates were licensed through reciprocity and 2 were granted reregistration licenses by examination. The following colleges were represented:

PASSED			
College	Year Grad.		Per Cent.
Columbian University	(1900)		89.1
Loyola University	(1916)	75.5,	87.6
Rush Medical College	(1884)		82.7
College of Physicians and Surgeons, Iowa	(1898)		75
Kentucky School of Medicine	(1869)		75
American Medical College	(1908)		75
St. Louis College of Physicians and Surgeons	(1910)		75.1

St. Louis University	(1917)	83.8
Syracuse University	(1916)	75
Medico-Chirurgical College of Philadelphia	(1915)	86.8
Meharry Medical College	(1911)	80.4
University of West Tennessee	(1915)	79.1
Baylor University	(1916)	79.6

FAILED

University of West Tennessee	(1915)	58.1

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Louisville		(1912)	Kentucky
University Medical College of Kansas City		(1913)	Kansas
Miami Medical College		(1905)	Kentucky

Book Notices

THE ORGANISM AS A WHOLE FROM A PHYSICOCHEMICAL VIEWPOINT. By Jacques Loeb, M.D., Ph.D., Sc.D., Member of the Rockefeller Institute for Medical Research. Cloth. Price, $2.50. Pp. 379, with 51 illustrations. New York: G. P. Putnam's Sons, 1916.

One of the things which has characterized the development of modern biologic science has been the adoption by the workers in this field of the methods of physics, chemistry and physical chemistry used in the so-called exact sciences. A more recent and perfectly logical step has been the adoption of the physicist's mechanistic attitude of mind with regard to the interpretation of the results obtained from such studies, not alone for a single physiologic process or the action of an individual organ, but also for the behavior of the organism as a whole and, indeed, for the behavior of the species or of the whole animal kingdom, including what is understood by the term "adaptation." Loeb sees the organism as primarily and fundamentally a physicochemical system which, subjected to various external stimuli, natural or experimental, gives rise to modes of individual or racial behavior, not essentially adaptive in their nature but definite and capable of calculation, so far as the factors involved are known. It is particularly fitting that Loeb, who has always stood in the fore in the use of exact methods in his many and various biologic researches, should be the one to give expression to this point of view. His method of treatment is experimental throughout. Mendelian heredity, artificial parthenogenesis, the tropisms, etc., each "does its bit" in a logical and fascinating presentation. The general scientific reader will find no better place in which to review or become acquainted with the present day problems and tendencies of general biology.

THE BREAST: ITS ANOMALIES, ITS DISEASES, AND THEIR TREATMENT. By John B. Deaver, M.D., LL.D., Sc.D., Professor of the Practice of Surgery, University of Pennsylvania, and Joseph McFarland, M.D., Sc.D., Professor of Pathology and Bacteriology in the Medical Department of the University of Pennsylvania, Assisted by J. Leon Herman, B.S., M.D., Assistant Surgeon to the Methodist Hospital of Philadelphia. Cloth. Price, $9 net. Pp. 724, with 285 illustrations. Philadelphia: P. Blakiston's Son & Co., 1917.

This covers the field of breast diseases in great detail. The evolution, involution and surgical anatomy of the normal breast are first given. A feature of the chapters on congenital and acquired anomalies is that practically every condition enumerated is supplemented by photographs of one or more patients. The article on infections deals especially with conditions which arise in the lactating breast. More than half of the book is devoted to tumors. Cysts are considered separately, and an attempt is made to simplify the pathologic classification which has become so complex in recent years. Certain forms of true tumors are considered here. Under nonindigenous tumors are grouped all of the different varieties arising from connective tissue and consequently not peculiar to the mammary gland. The chapter on carcinoma is especially valuable because of the statistical study of a large series of cases and the consideration of the operative technic. An interesting chapter on the nonoperative treatment of cancer of the breast is contributed by Dr. George E. Pfahler, in which his extensive experience with the Roentgen ray is given. The foreign literature has been especially well reviewed, and a literature index is inserted at the end of the article on each disease.

Social Medicine, Medical Economics and Miscellany

REEDUCATION AND REHABILITATION OF CRIPPLES MAIMED AND OTHERWISE DISABLED BY WAR

[The following is the statement of Dr. S. I. Franz to the conference on the reeducation and rehabilitation of maimed, crippled and otherwise disabled soldiers held under the auspices of the General Medical Board of the Advisory Commission of the Council of National Defense.]

The importance of the work looking toward the rehabilitation of the maimed and crippled, using these two terms to cover the great number of different kinds of defects which have been produced, is being appreciated more and more by the Belgian, English, and French governments, and by the special physicians and others who have been compelled to deal with certain of the problems. This is shown both by the number of institutions which have been established, and which are being planned, and by the amount of space in the medical journals which is given to the consideration of the various factors involved. More recently there have been numerous expressions of criticism that these matters were neglected at the beginning of the war, and many hopes that more energetic measures would now be taken to deal with this class which had been neglected.

As the result of previous wars and of accidents in industrial pursuits numerous crippled and maimed have been produced. Except in relatively few cases these individuals have been permitted to bear their infirmities as well as they could, and the burden of their support has fallen on their families, or on the state if they became social parasites, beggars, and the like.

In many cases these individuals have gravitated to the poorhouses or to special homes for the crippled, where they have been supported mostly in idleness. Now, however, it is being appreciated that great effort, and as concerted as is possible, must be made to limit the parasitic conditions, and to make these relatively incompetents as competent as possible. For the general welfare of the nation as a whole, for the comfort and the well-being of the individuals, a *laissez-faire* method of dealing with them cannot, and should not, be tolerated. No matter whether or not pensions will be provided for partial or for complete support, humanitarian and social interests demand that something more shall be done. Efforts must be made to bring about a functional betterment, for the performance of those operations which will make the individual a useful and a productive member of society. On the side of the individual efforts must be made to prevent the mental attitude of dependence and of woefulness, and this attitude or tendency to this attitude must be replaced by one of effort, of pride in accomplishment, and of self-help.

Statistics are not available regarding the number of those who require special treatment of the nature of reeducation. That the number is not a small one, and that in case the war continues for any length of time for our troops the number will not be small in these United States, are evidenced by the efforts which are being made in the countries which have been at war for nearly three years to bring about a medical and public appreciation of the conditions. The several conferences of the allied nations at which the different aspects of the general problems (medical, educational, scientific, social, etc.) have been discussed have also shown the need of preparation for many more than are now taken care of.

Borne has divided these individuals (and has grouped with them certain others) into three general classes:

1. Those who, with immediate care, can be made almost perfect. (This group includes those who have been operated on, but who have been compelled to remain quiet and almost motionless, and who consequently have also suffered from muscular atrophies and ankyloses. Here also come the tendon retractions, the defects which are due to adherent bind-

ing cicatrices, etc. In some cases it may take as long as six months to get an individual of this class normal, or approaching his normal condition. Many of these individuals have been incapacitated in the manners mentioned because of lack of appreciation of the possibilities of the production of such defects.)

2. Those who are definitely educable, or who are readaptable to work of some kind, but who cannot return to their former occupations on account of the defects which have been produced. (The class includes all those who have lost a part of the body, such as a hand, or foot, or arm, or leg, or even one or more fingers. In these cases after surgical interventions, amputations and the like, it may take only three or four months to make the individual as nearly normal as he can be made. This includes, of course, necessary orthopedic appliances.)

3. Those who are so severely and extensively mutilated and infirm that nothing can be done for them. (Relatively few of this class will exist. Some of those now thought to be incapable of training will be found to be amendable to some kind of treatment, and this is one of the problems which will need to be considered. Those who cannot be benefited by treatment of any kind, educational or otherwise, will probably have to be kept as permanent wards in special institutions or in homes for disabled soldiers.)

It has been estimated by Amar that if proper and prompt treatment is available 80 per cent. of the whole number are reeducable. Some of those who are not counted in this classification will probably be dealt with in special institutions where they may also be educated. This is true of the blind and the deaf. Of the total which he considers educable, Amar also counts that at least three quarters may be unconditionally returned to some kind of gainful occupation and to useful social life, after they have been given the training which their conditions warrant. The remaining quarter can be instructed in certain occupations, and can carry them out for such a period of time, that will enable them to be useful although their physical conditions may make them very slow in performance and may prevent their active competition with more normal individuals. For this last class, therefore, special workshops may be required, special positions may need to be sought, and some may need special permanent care.

Already in France and in England much work has been done with the maimed and crippled, as has been said, and the kinds of occupations which have been undertaken by these defectives are numerous. Besides farming and horticulture, for which many have special aptitudes and previous special training and for which their infirmities are not prohibitive, the following occupations have been taught, or retaught, to certain individuals: clerical work, stenography and typewriting (with the necessary instruction in writing, drawing, geography, arithmetic, commercial law, important languages besides the native language), carpentry, wood turning and carving, tailoring, brushmaking, basketmaking, shoemaking, book binding, trussmaking, making orthopedic appliances, locksmithing, making chains, making mats and rugs, making playthings, working in wood and in iron in making articles for ornaments, plastic arts.

It will readily be seen, therefore, that a considerable number of occupations are open to those who have been maimed or crippled, and that many more will be found in our industrial establishments there is no doubt. In the selection of an occupation there should be considered carefully the tastes and the previous aptitudes of the individuals, their past occupations, the degree of education, and great care must be exercised that caprice is not given away, so that an individual select such an occupation that it is inconsistent with his infirmity and that, if not entirely consistent, it is so time-consuming that the cost of reeducation is out of proportion to any expected gains that the individual may make subsequently. In many cases also it is necessary to limit the kinds of occupations from which selection may be made, for certain occupations may tend to increase an existing infirmity such as a contracture or a laxity of an articulation which cannot be corrected.

Rochard has criticized the conduct of the reeducation work in France, because of the lackadaisical methods which were used at the beginning. The corrective apparatus was badly conceived, awkward and not effective for its purpose in many cases, and due regard was not paid to the individual. It is important that each individual be considered as an individual, and that he be treated with that kind of mechanotherapeutic measure that will be best fitted to his particular needs, and at the same time that if any corrective apparatus is needed this should be considered in relation to the occupation that the individual is to undertake as a matter of rehabilitation and also in relation to the defect which is present.

Perhaps no better general outline of what is needed can be cited than that of a commission of the Royal Society of Medicine which has recommended as follows:

1. A service of physical treatment, consisting of hydrotherapy, electrotherapy (including roentgenotherapy), mechanical treatment, medical gymnastics, and massage should be made available at the earliest possible date for all soldiers needing it who are disabled by war. 2. Centers of physical treatment, comprising all the foregoing methods, should be established throughout the country on an adequate scale, and wherever possible in association with general hospitals, so that other forms of special treatment and diagnosis may be readily available. 3. At such centers there should be a uniform system of measurements and records. 4. Centers of reeducation and centers of physical treatment should be closely associated.

In any consideration of the general matter of reeducation and rehabilitation one matter must be given due attention, viz., the placing of the men after the reeducation has been completed. It would be a waste of time and effort if such individuals were reeducated and they were refused by the public to take advantage of their possibilities. The organization of the work must deal with these matters, and perhaps with such other things as are being considered in France, like mutual societies, organizations, and cooperative endeavors for the general benefit of the members. And propaganda for the popularization of the work of these men, for their utilization in a variety of ways, should not be too lightly considered.

Dr. Amar, one of the most noted of the French leaders in the movement for rehabilitation, has protested against the lack of preparation and the failure to provide suitable facilities for the proper prosecution of the work when the maimed first came in. He has insisted on the necessity for full preparation and on the necessity for careful, scientific and thorough work. In this regard he has said: "The time has come for organizing the work of the wounded in such a manner that each one may take his true place in the social machine, and contribute according to his ability." And, in like vein, Regnier, after pointing out some of the difficulties of the work at the beginning has emphasized the need of a careful "scientific organization" if the work is to be conducted for the greatest benefit of the country, and of the individuals who have helped their country and who desire to be returned to that condition in which they may be of the greatest help to themselves and to their fellows.

Soldier's Heart

The British Medical Research Committee publishes a report by Dr. Thomas Lewis of investigations made by him and his colleagues at Hampstead of the condition called soldier's heart, a term which the committee belives is not a good one, and for which Lewis has proposed the term "effort syndrome." It is said (*Lancet*, London, April 14, 1917) that there is no proof that the condition is primarily cardiac. Lewis gives the leading symptoms in the order of their importance as breathlessness, precordial pain on exertion, exhaustion, giddiness and fainting. Of less importance are palpitation, headache, lassitude, irritability of temper, insomnia, shakiness and flushing. A disinclination to take alcohol, commonly for reasons of distaste, is regarded as a rather remarkable association. Further classifying the characteristic signs, Lewis gives the following as ascertained on examina-

tion: increased heart rate, with exaggerated response to emotion, exercise and posture; exaggerated systolic blood pressure; diffuse apex beat and irregularity; high pressure in patients up and about; fleeting disturbances of temperature, and quickened respirations after exertion, and often also in the resting state; coldness, blueness or wetness of the palms and soles; tremor of the hands; exaggeration of the deep reflexes; hyperacid urine with increased calcium output chiefly in the form of calcium oxalate crystals; and an increase in white corpuscles to 12,000 on the average, chiefly in the lymphocytes. The alteration in the blood is said to lie in the deficiency of those salts, which, acting as buffers, ease the shock to the reaction caused by the addition of acids or alkalies. In their absence the acids evolved by muscular exercise tend to irritate the respiratory centers. There is a high incidence of the condition among men who were formerly in sedentary occupation. This indicates that the initial stages of the training of conscripts of this type should be more moderate. Keep them out of bed; use no drugs in treatment.

Climate and the Consumptive

The open-air treatment of tuberculosis provides a powerful weapon against a dreaded disease. The enthusiasm which it awakened not unnaturally centered attention prominently for a long time on the outdoor life and made climate the pivotal point of consideration. Gradually other important helps in the fight for recovery are being emphasized so that the need for rest, suitable food, and even appropriate medication is not overlooked at present. But the quest of climate remains the feature that is most debated with the expectation of a helpful solution. In *Public Health Reports*, 1917, **32**, 318, Asst. Surg.-Gen. J. W. Trask of the United States Public Health Service comments on this common idea that somewhere there must be a region with a climate specially suited to the tuberculous. He says:

"Climate relates to the condition of the air of a locality as regards temperature, humidity and prevailing winds, and for the purpose of the present discussion may be considered to be the same thing as atmosphere. It is really a suitable and favorable atmosphere the consumptive needs and seeks. The conditions to be sought in an atmosphere or climate are those which are most suitable to maintaining the natural well-being of the body, conditions adapted to the well, but of special importance to those who have a chronic affection, such as tuberculosis, to overcome. The things which make a climate good or bad are the temperature and humidity of the air, the frequency and velocity of winds, and the presence or absence of dust and smoke."

The best climate for one affected with pulmonary tuberculosis has been described as that which furnishes a favorable atmosphere for the greatest number of hours of the day and the greatest number of days of the year. To live in an ideal climate one would have to divide the year between different localities. Even this would fall short of the highest ideal if it meant failure to take into account the items of expense, the problems of food, exercise and work, the possibility of medical supervision, and the question of family and friends. In the midst of such conflicting interests there is a refreshing helpfulness in the epitome prepared by Dr. Trask:

"A favorable climate for a consumptive is one that is not too warm. A moderately cool atmosphere is invigorating, while a too warm one is depressing. Very cold weather, on the other hand, makes the living of an outdoor life more difficult and less attractive. Moderately cool atmospheric conditions are those to be sought. No locality has a climate that is favorable all the year, and most localities in the United State have favorable climates for a considerable portion of the year if one will only take advantage of them. In one's quest for a favorable climate one must not forfeit suitable food, rest and peace of mind, or gain a more favorable atmosphere in which to live at the price of homesickness and worry. The consumptive can usually obtain the most favorable conditions for recovery, including an outdoor life, suitable food, rest, medical attention and nursing, at or near his home. A suitable atmosphere or climate can be obtained during many hours of the day by avoiding overheated or crowded rooms and by sleeping on a porch in all ordinary weather and in a room with open windows when it is very cold or stormy. Leaving home, except to go to a sanatorium, is fraught with much danger, unless one is financially able to meet all possible demands, and it should be most carefully considered even then."

Medicolegal

Validity of Contract to Attend Smallpox Patient

(Mayor and Council of City of Sugar Valley vs. Mills (Ga.), 91 S. E. R. 17)

The Supreme Court of Georgia, in reversing a judgment obtained by plaintiff Mills, a physician, for services rendered to a smallpox patient, says that the town of Sugar Valley was incorporated by an act of 1887 which provided that the corporate powers of the town should be vested in a mayor and five councilmen, and by the name of the mayor and council of the town of Sugar Valley they might sue and be sued and exercise all other corporate powers that might be necessary in performing their duties; that said mayor and councilmen should have power and authority to pass all laws and ordinances that they might deem necessary for the government of said town. There was no other general welfare clause, or clause in regard to the right to make contracts, in the charter. But these provisions of the charter of the town were supplemented by the general law, as contained in Section 1646 of the civil code, which is as follows: "The ordinary of each county, or the corporate authorities of any town or city in this state within the limits of which the smallpox has appeared, or may appear, are authorized and empowered to provide a suitable hospital for those so afflicted, and to furnish them with medical or any other attention that in their judgment those so afflicted may require." When considered together, the foregoing provisions of the law confer authority on the mayor and councilmen of the town of Sugar Valley to employ a physician for the purpose of treating smallpox patients within the incorporate limits. However, construing the plaintiff's petition most strongly against the pleader, it was not to be accepted as alleging that the mayor and council, acting in their corporate capacity, entered into a contract with him. The language should be construed as alleging that the mayor at one time informally employed the plaintiff, and that at another time the council informally employed him, to treat the smallpox patient. It was erroneous to overrule the ground of demurrer to the petition that it was not alleged that the plaintiff made any contract with the mayor and council of the town of Sugar Valley in its corporate capacity. The charter of the town of Sugar Valley, supplemented by the general law (civil code, Section 1646), provides that the municipality may enter into contracts for medical services to smallpox patients, through the instrumentality of the mayor and councilmen of the town. This contemplates formal action by the mayor and councilmen when duly assembled. An agreement, entered into privately with the mayor and at another time with the councilmen, will not suffice.

Practicing of Medicine by Bishop or Preacher in Violation of City Ordinance—Church Receiving Pay

(Fealy vs. City of Birmingham (Ala.), 73 So. R. 296)

The Court of Appeals of Alabama, denying a rehearing, affirms a conviction of defendant Fealy whom the complaint charged with having treated or offered to treat one Keeling, a human being, of and for gallstones, organic heart trouble, or other diseases of human beings without having first obtained a certificate of qualification from the state board of medical examiners, against the laws and ordinances of the city of Birmingham. The court says that it is of opinion that the complaint set forth an offense sufficiently pleaded. By a blanket, or omnibus, provision of Ordinance 181 of the city of Birmingham, all misdemeanors against the laws of the state are also made offenses against the city. The statute against practicing medicine without having obtained a cer-

tificate from the state board of medical examiners is to be found in Section 7564 of the code, which makes it a misdemeanor for any person, without such certificate, "to treat or offer to treat diseases of human beings by any system of treatment whatsoever." It has been frequently held that in charging a statutory offense, the offense is sufficiently pleaded if set forth in the language of its creation. And the court is not impressed with the demurrers challenging the constitutionality of the ordinance; the regulation of the practice of medicine is a valid exercise of the police power. Nor does the court think it was error to sustain demurrers to the defendant's pleas that in the treatment of said Keeling as alleged in the complaint he was practicing and putting in effect his religious faith and doctrine as set forth and promulgated by the Altrurian Church of which the defendant was a bishop, and a preacher, etc. The question to be determined was not whether the defendant practiced his religion in treating Keeling, but whether the defendant practiced medicine, within the meaning of the statute. Assuming that one brings himself within the statute and practices medicine without a certificate of qualification, he is none the less guilty because in so doing he also practiced his religion. The regulation of the practice of medicine is a police regulation for the protection of the public; it does not interfere with the exercise of religious liberty; it merely safeguards the lives and health of the public against the use and employment of dangerous agencies in the hands of the unlearned and unpracticed in the science and art of medicine. Whether an act is or is not embraced within the statute as practicing medicine depends on the latitude of interpretation of the act. The Alabama statute is extremely broad; its language is: "Any person who treats or offers to treat disease of human beings . . . by any system of treatment whatsoever." Under this statute, this court apprehends, any agency of supposed therapeutic value set in motion with the design to cure, prevent or alleviate human disease or suffering of body or mind by one who receives a quid pro quo (consideration) for such service would be comprehended within its terms; not necessarily that there should be an employment of drugs or surgical or mechanical appliances. Physicians in some cases ascribe a therapeutic value or efficiency to the power of mental suggestion; would the physician, in employing such agency, be any the less practicing his profession? The court thinks not. In those cases, however, in which no charge is made for the service, and recourse is had merely to prayer, without the employment of material or human agencies, it cannot be said that the person invoking divine interposition in behalf of another is treating or offering to treat diseases of human beings by any system within the meaning of the statute, and cannot be said to be practicing medicine. In the instant case, the defendant not only employed prayer and the laying on of hands, but, if Keeling's version be accepted, the defendant put his ear over Keeling's heart and examined him somewhat in the region of the kidneys and liver, and rubbed him about the affected parts. It was immaterial that the sums paid to the defendant went to the church or society of which he was president and bishop, since, if the offense was committed by the defendant, the law would countenance or tolerate no evasion by his receiving compensation by indirection through the medium and device of a corporation.

Against Compulsory Roentgenographic Examination

(Gregory vs. Acme Road Machinery Co. (N. Y.), 162 N. Y. Supp. 571)

The Supreme Court of New York, Appellate Division, Fourth Department, affirms an order denying a motion made by the defendant for an order directing the plaintiff to submit to having a roentgenogram taken. The court says that the question was whether the plaintiff might be compelled, under the provisions of Section 873 of the code of civil procedure, to submit to a roentgenographic examination in connection with the usual physical examination before trial, in an action for personal injuries. The special term of the supreme court held that the court has no power to order the plaintiff to submit to the taking of a Roentgen-ray picture, and this court thinks that holding is correct. If it were absolutely certain that the plaintiff would not be injured by the taking of the roentgenogram, the court thinks he might be compelled to submit to it in aid of the physical examination. It was true that the expert, who it was proposed should take the roentgenogram, stated in his affidavit that with his apparatus there was no danger of burning, or of subjecting the plaintiff to any bodily injury. But it is well known that persons have been burned and seriously injured in the taking of such roentgenograms, and the expert conceded that, when an operator is not experienced and has not extensive knowledge of roentgenography, a person may be burned by the ignorance of the operator and by too long exposure. This court is clearly of the opinion that the plaintiff cannot be required to take the hazard of such an examination. This is not the taking of an ordinary photograph, which should do no harm to the subject. A want of attention, care and skill on the part of the operator might result in serious injury to the plaintiff, and that hazard the plaintiff should not be required to take, even if the provisions of the section were adequate to compel him to do so. A further discussion of the question seems unnecessary.

Liability in Personal Injury Case for Mistake of Surgeon

(Galveston, H. & S. A. Ry. Co. vs. Miller (Texas), 191 S. W. R. 374)

The Court of Civil Appeals of Texas, in affirming a judgment for $17,750 damages in favor of plaintiff Miller, for personal injuries, holds that there was no error in the trial court's refusing to instruct the jury that if it found the plaintiff's condition was impaired, rather than benefited, by any operation performed on him, then the jury was instructed that he could not recover on account of such impaired condition as a result of such operation, if any, unless the jury found from a preponderance of the evidence that such operation appeared to the surgeon performing it to be necessary, and that it was more probable that such operation, when performed, would benefit the plaintiff rather than injure him. Inverting the instruction, it would seem that it could be construed by the jury to have required it to find that the operation appeared necessary to the operating surgeon, and to have required the jury also to find as a fact that the operation would more probably benefit than injure the plaintiff, before he could recover any damages for the impaired condition resulting from the operation, if the jury found that the condition was impaired by the operation. The instruction was not a correct statement of the law. All that could defeat the plaintiff's claim for damages for increased injury caused by the operation was his own negligence in the selection of a surgeon. If not negligent in the selection of the surgeon, the defendant was liable for the mistake, if any, of the surgeon; and it was immaterial whether the operation appeared to the surgeon as necessary, or whether in fact the operation was more beneficial than hurtful.

Sufficient Information and Proper County for Trial

(People vs. Maczulski (Mich.), 160 N. W. R. 576)

The Supreme Court of Michigan, in affirming a conviction of the defendant of having unlawfully procured himself to be registered as a physician under the provisions of Act 237 of the Public Acts of 1899, as amended by Act 368 of the Public Acts of 1913, says that the information charged the offense in the language of the statute and was sufficient. The supreme court also thinks that the court in the county in which the record showed that the defendant's application for a license was filled out and filed and the license was issued had jurisdiction to try the case, notwithstanding that he passed an examination in another county.

Society Proceedings

COMING MEETINGS

Montana Medical Association, Kalispell, July 11-12.
Western Roentgen Society, Kansas City, Mo., July 20-21.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

June, CLIII, No. 6

1 *Some Neurologic Observations in One Hundred and Fifty Laminectomies for Spinal Disease and Injury. C. A. Elsberg, New York.—p. 781.
2 *Obsolete Miliary Tubercles of Spleen. O. Klotz, Pittsburgh.—p. 786.
3 *Association of Gastric Symptoms in Nephritis with Retention of Nitrogenous Waste Products in Blood. A. F. Chace, New York.—p. 801.
4 Studies in Physiology and Pathology of Stomach After Gastro-Enterostomy. A. O. Wilensky and B. B. Crohn, New York.—p. 808.
5 Two Cases of Probable Syphilis of Intestines. D. A. Haller and I. C. Walker, Boston.—p. 824.
6 Diverticulum of Duodenum; Report of Case. S. Basch, New York.—p. 833.
7 *Use of Raw Eggs in Practical Dietetics. W. G. Bateman, Missoula, Mont.—p. 841.
8 *Treatment of Bronchial Asthma by Vaccination; Report of Cases. M. H. Sicard, New York.—p. 856.
9 *Effect of Anesthesia and Operation on Kidney Function. R. Colp, New York.—p. 868.
10 *Unusual Disorder of Cardiac Mechanism Relieved by Surgical Operation. E. B. Krumbhaar, Philadelphia.—p. 872.
11 Lead Poisoning in Children, with Especial Reference to Lead as Cause of Convulsions. K. D. Blackfan, Baltimore.—p. 877.
12 *Case of Primary Endothelioma of Pleura. R. A. Keilty, Philadelphia.—p. 888.

1. See THE JOURNAL, June 10, 1916, p. 1852; also July 15, 1916, p. 168.

2. **Obsolete Miliary Tubercles of Spleen.**—In a series of 404 necropsies, tuberculosis was encountered in 172 cases. The spleen was involved sixty-nine times, and in forty of these miliary lesions were completely or almost completely healed by fibrosis. The average age was 42 years and the youngest was 18 years. Six of the cases showed a persistent tuberculosis in other organs. In fifteen cases the liver also contained healed miliary tubercles. In none of the cases had there been recognizable clinical manifestations of splenic involvement. The spleen was not enlarged. In twelve cases with healed miliary tubercles of the spleen no other tuberculous process was found. The splenic infection was a hematogenous one arising most commonly from antecedent foci in the lungs or peribronchial glands. Those cases in which no primary tuberculous focus was found probably had a similar mode of origin in which, however, the initial focus was of minor extent unrecognizable at the time of necropsy. Klotz points out that the fibroses which are observed in anthracotic peribronchial glands are difficult of analysis as indicating a preceding infectious origin of the fibrosis. The healed splenic tubercles are recognized only by careful search and complete gross sectioning of the tissues of the organ. The presence of the healed miliary tubercles of the spleen indicates the frequency of a tuberculous bacteremia from which the tissues may entirely recover. The different organs demonstrate a variable resistance to the tuberculous infection. Reinfection may take place in the spleen.

3. **Gastric Symptoms in Nephritis.**—Gastric symptoms, Chace says, are among the most common early symptoms of nephritis. In cases with obscure gastric disturbances the chemical examination of the blood has been found very valuable. Several cases are reported in which the estimation of the blood creatinin not only showed that the patients were suffering from severe nephritis, but gave a fatal prognosis. In some of the earlier cases the blood uric acid was of value as an early diagnostic sign.

7. **Use of Raw Eggs in Practical Dietetics.**—Further experiments made by Bateman on man show that raw egg-white is a decidedly indigestible substance. It may cause diarrhea and vomiting when ingested in any large quantity. Its utilization by the body is poor, since it is used only to the extent of from 50 to 70 per cent.

8. **Treatment of Asthma by Vaccination.**—Whatever the variety of germ causing asthma, whether *Streptococcus viridans* or *Streptococcus hemolyticus*, Sicard is convinced that an autogenous vaccine made from the sputum will cure the attacks. It is best given twice a week, in constantly increasing strength, for twelve to twenty injections. It is much better to give such dosage that local reaction occurs, although Sicard has had cures in patients who showed no local reaction. On the other hand he has had cases which showed no improvement until doses were given in sufficient quantity to cause local reaction. Sicard has adopted the practice of beginning with 100,000,000 in adults and feeling his way cautiously until finding the dose that caused local reaction, and then provoking a local reaction on every injection. If at any time the local reaction be too severe, or if general symptoms occur in the form of fever, chilliness, general malaise or aches, or increase in the asthma, he allows a rest for a period before beginning again, using his judgment as to continuing the same dosage or dropping back to a smaller one; it is better to avoid going backward if possible. One thousand million is often far enough to carry them, although more obstinate cases may require 2,000 million, and Sicard has carried them to 3,000 million and higher. It is very striking to see the asthma clear up after the first injection, as has happened in a number of cases. The longest period cure Sicard reports is two years.

9. **Effect of Anesthesia and Operation on Kidney.**—On the whole, says Colp, the average case after thirty-six hours postoperative shows very little change in kidney function as demonstrated by the phenolsulphonephthalein test, although 25 per cent. showed urinary changes, which in ten days time were again negative. The functional activity of the kidney is depressed as the length of anesthesia is increased, while in short anesthesias the kidney might even appear to be stimulated to a slight degree. As age increases the threshold activity of the kidney is lessened. Nervous patients, anemic, obese and arteriosclerotic patients as a rule, show some effect of their physical or psychic state on kidney function. Preexisting conditions of albuminuria have a tendency to decreased phthalein excretion, and those cases which have a decreased phthalein excretion, in the majority of instances, show effects of kidney depression as evidenced by careful urinary analysis, although these effects are only temporary. For long anesthesias and apparently for nervous patients, gas and oxygen as an anesthetic seems to have the least irritating effect on kidney function, as demonstrated especially by urine examination.

10. **Disorder of Cardiac Mechanism.**—A case of cardiac arrhythmia by Krumbhaar is described in which a condition of ectopic beats arising in different parts of Tawara's node was simulated by a shortened conduction time (P-R interval) with recurring auricular extrasystoles (pulsus bigeminus). Both of these disorders of the cardiac mechanism were relieved by a pelvic operation (anterior and posterior colporrhaphy), at least to the extent that they disappeared during the period of observation.

12. **Primary Endothelioma of Pleura.**—Keilty's patient presented loss of weight, weakness, cough, expectoration, headache, vomiting, gastro-intestinal symptoms, chest signs of consolidation, Roentgen-ray shadow over the primary growth, metastases, palpable lymph nodes, palpable liver with nodules, fixation of the vocal cords, negative sputum and Wassermann, and secondary anemia. The case terminated in a nephritis, cardiac failure, jacksonian convulsions and hemiplegia. Pathologically there was one large primary mass arising from the pleura, composed of endothelial cells in various types and arrangements, with extension to the lung, bronchial lymph nodes, trachea and bronchi and compression of the aorta. Metastases followed to the liver, kidney, lymph nodes, abdominal skin, right radius and brain, with erosion of the spinal bony column and fracture of a rib.

American Journal of Orthopedic Surgery, Boston

June, XV, No. 6

13 Plea for More Frequent Use of Rational Functional Methods in Treatment of Fractures. C. H. Bucholz, Boston.—p. 447.
14 Orthopedic Findings in Group Study of Miscellaneous Affections. G. J. McChesney, San Francisco.—p. 459.
15 Hereditary Deforming Chondrodysplasia; Report of Cases. A. Ehrenfried, Boston.—p. 463.

16 Delayed Development in Tarsus; Report of Two Cases. C. L. Lowman, Los Angeles, Calif.—p. 479.
17 Apparatus for Application of Jackets in Scoliosis. F. H. Ewerhardt, St. Louis.—p. 483.

American Journal of Roentgenology, New York

June, IV, No. 6

18 Some Essential Points in Anatomy of Lung. W. S. Miller, Madison, Wis.—p. 269.
19 Relation of Pathology of Pulmonary Tuberculosis to Roentgen Findings. K. Dunham, Cincinnati.—p. 280.
20 Pneumonoconiosis. W. W. Boardman, San Francisco.—p. 292.
21 Roentgen Treatment of Hyperthyroidism. G. W. Grier, Pittsburgh.—p. 300.
22 Action of Roentgen Rays on Plate, Pastille and Skin. J. Remer and W. D. Witherbee, New York.—p. 303.
23 Unusual Position of Ureteral Calculi. G. C. Johnston and G. W. Grier, Pittsburgh.—p. 308.
24 Method for Dental Stereoroentgenography. H. Letord and C. G. Lunan, El Paso, Texas.—p. 309.

American Review of Tuberculosis, Baltimore

April, I, No. 2

25 Nature of Resistance to Tuberculosis. A. K. Krause, Baltimore.—p. 65.
26 Group Studies in Tuberculosis Under Different Climatic Conditions. W. C. Klotz, Los Angeles, Calif.—p. 83.
27 *Prognosis of Pulmonary Tuberculosis in Infancy. T. C. Hempelmann, St. Louis.—p. 99.
28 Case of Recurrent Pneumothorax. M. I. Marshak and J. W. Craighead, Edgewater, Colo.—p. 109.

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29 *Case of Intrathoracic Cyst with Calcification. G. J. Heuer, Baltimore.—p. 129.
30 Renal Function in Pulmonary Tuberculosis. E. H. Funk, Philadelphia.—p. 145.
31 What Massachusetts Is Doing to Prevent and Control Tuberculosis. J. B. Hawes, II, Boston.—p. 157.
32 Experimental Investigations of Tuberculous Peritonitis and Effect of Pneumoperitoneum. R. G. Peschman and H. J. Corper, Chicago.—p. 165.

27. **Pulmonary Tuberculosis in Infancy.**—A study was made by Hempelmann of the fate of 130 infants under 2 years of age with pulmonary tuberculosis. Sixty-four of these died and sixty-six were living at the time of the last note on the history. Of these sixty-six, only thirty are known to have lived for a period of more than one year after the diagnosis was made. Some of these, however, were observed for periods of four and five years. In computing the mortality, only those babies were classed as "living" who were known to have lived at least one year after the diagnosis was made. This eliminated thirty-six babies and the mortality among the remaining ninety-four was as follows: Under 1 year of age, the mortality was 78.7 per cent.; from 1 to 2 years of age, the mortality was 57.4 per cent., and for the 2 years, the mortality was 68 per cent.

29. **Case of Intrathoracic Cyst.**—The patient whose case is cited by Heuer was a man 53 years of age, who up to the day of onset of his illness had performed the heaviest labor and was unaware of the condition in his chest until a physical strain gave rise to pain, cough and shortness of breath. He presented the physical signs of pleurisy with effusion. In an attempt to confirm the diagnosis by thoracentesis, the exploratory needle met with resistance such as might be offered by a bony structure. The roentgenograms made possible a diagnosis which could not have been reached by physical examination alone. From these it was evident that there was present a cystic condition with complete calcification of the cyst wall, and that the cyst contents consisted of fluid and air. That was a communication between the cyst and the lung was clinically evident because of the periodic expectoration of large amounts of sputum. The roentgenogram apparently showed this point of communication. Following the roentgenologic studies diagnostic efforts were directed toward establishing the nature of the cystic condition. There was no evidence of tuberculosis, no eosinophilia and no characteristic findings in the sputum, such as hooklets or hairs. Etiologically, there was no history of pulmonary affections, of trauma of the chest or of intimate association with dogs. A positive diagnosis could not be made before operation. The diagnoses suggested were encapsulated empyema, hematoma of the thorax, echinococcus cyst and dermoid cyst.

Annals of Ophthalmology, St. Louis

April, XXVI, No. 2

33 Some Phases of Diagnostic and Therapeutic Uses of Tuberculin in Uveitis. H. Woods, Baltimore.—p. 223.
34 Internal Secretory System and Eye. R. S. Lamb, Washington, D. C.—p. 239.
35 Cataract Operation as it is Done by Spanish and Latin American Surgeons. J. S. Fernandez, Havana, Cuba.—p. 243.
36 Lupus Vulgaris, Particularly in Its Involvement of Ocular Structures. B. Chance, Philadelphia.—p. 246.
37 Case of Lupus of Conjunctiva and Cornea. C. E. G. Shannon and L. W. Hughes, Philadelphia.—p. 255.
38 Pressure Changes in Curvature of Cornea, Due to Chalazion and Other Lid Tumors. T. W. Moore, Huntington, W. Va.—p. 257.
39 Case of Orbital Abscess within Muscle Cone. C. M. Miller, Richmond, Va.—p. 260.
40 Unusually Long Open Wound After Cataract Extraction. E. J. Bernstein, Detroit.—p. 265.
41 Suggestion for Improved Prothesis. T. J. Dimitry, New Orleans.—p. 268.
42 Tuberculosis of Retinal Vessels with Recurring Hemorrhages and Proliferating Retinitis. F. R. Spencer, Boulder, Colo.—p. 272.

Archives of Diagnosis, New York

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43 Dyspituitarism. G. A. Moleen, Denver.—p. 103.
44 Endothelial Cells — Normal Blood Constituent — New Staining Method for Mitochondria. F. Proescher and H. A. Seil, Pittsburgh.—p. 122.
45 Diagnosis of Arterial Group. S. R. Roberts, Atlanta, Ga.—p. 129.
46 Diagnosis of Pellagra. E. J. Wood, Wilmington, N. C.—p. 139.
47 Symptoms vs. Physical Signs in Early Diagnosis of Pulmonary Tuberculosis. P. H. Ringer, Asheville, N. C.—p. 145.
48 Clinical Consideration of Temperature of So-Called Obscure Origin in Infants and Children. H. Lowenburg, Philadelphia.—p. 150.
49 Gastric Disturbance in Gallbladder Disease. W. F. Cheney, San Francisco.—p. 164.
50 Syphilis of Stomach; Diagnosis and Treatment. B. B. V. Lyon, Philadelphia.—p. 169.
51 *Diagnostic Sign of Gastro-Enteroptosis. C. D. Aaron, Detroit.—p. 178.
52 Early Symptoms and Diagnosis of Acute Infantile Paralysis. L. C. Ager, Brooklyn.—p. 180.
53 Diagnostic, Prognostic and Therapeutic Value of Lumbar Puncture in Spinal Injuries. H. Neuhof, New York.—p. 193.
54 *Diagnosis and Prognosis in Fractures of Base of Skull, F. E. Bunts, Cleveland.—p. 196.
55 Pain in the Back. W. S. Reynolds, New York.—p. 202.
56 Factors in Prognosis of Syphilis of Nervous System. E. L. Hunt, New York.—p. 207.
57 Diagnosis and Prognosis of Cerebrocerebellar Diplegia. L. P. Clark, New York.—p. 211.
58 Degenerate; Born Delinquency and Criminologic Heredity. J. V. Haberman, New York.—p. 218.

51. **Diagnostic Sign of Gastro-Enteroptosis.**—Aaron states that in cases of gastro-enteroptosis, deep, continuous pressure with the ends of the fingers, over the celiac plexus, in the epigastrium will induce pain. The point of sensibility varies in different individuals. To locate it, the cooperation of an assistant is necessary. With the patient standing, the physician applies his fingers in a series of deep pressures until the point of greatest tenderness is found. The fingers are held at this point. The nurse then takes a position behind the patient, passes both arms about him so that the hands, meeting in front, rest on the hypogastrium and lifts the abdomen in its entirety. This relieves the epigastric pain at once, despite the great pressure exerted by the physician at the point of tenderness. When, however, the nurse allows the patient's abdomen to drop to its former position, the deep pressure continuing, the pain reappears. Aaron has found this sign to be constant in gastro-enteroptosis. In organic disturbances, such as gastric ulcer, carcinoma, etc., the pain under pressure continues even when the abdomen is lifted.

54. **Fractures of Base of Skull.**—As the result of his clinical experience, Bunts has formulated the following rules for his guidance: First, simple cases of fracture of the base of the skull without severe laceration of the brain practically all get well without operative interference. Second, the greatest cause of danger in these cases is from septic meningitis and operation cannot prevent this complication, but rather adds to its probability. Third, the bad cases, complicated by a bursting fracture of the skull with an extensive laceration of the brain, practically all die. Fourth, it is in this class of cases that operations such as removing spicula of bones, crushed brain, etc., are most frequently resorted to, but

usually without avail. Fifth, distinct compression symptoms coming on immediately after the injury without obvious evidence of extensive brain laceration would probably be deserving of decompression operation, for they might be due to hemorrhage and be susceptible for relief or arrest. Sixth, late symptoms of compression with beginning choked disk might be due either to hemorrhage or edema, and should be subjected to immediate operation, though in the one case in which Bunts had an opportunity to follow this plan, operation and subsequent necropsy showed no clot, very slight hemorrhage, but extensive laceration of the brain, not only in the lowest frontal convolution near the site of fracture, but in the occipital region far from the fracture the laceration of the brain was even greater than in the frontal. Seventh, there are insufficient available statistics as yet to show that decompression operations hasten the recovery after fracture of the base, or lessen subsequent liability to cerebral disturbances.

Archives of Internal Medicine, Chicago

June, XIX, No. 6

59 Hay-Fever and Hay-Fever Pollens. W. Scheppegrell, New Orleans.—p. 959.
60 *Systolic Blood Pressure Following Exercise; Remarks on Cardiac Capacity. D. L. Rapport, Boston.—p. 981.
61 *New Interpretation of Pathologic Histology of Hodgkin's Disease. D. Symmers, New York.—p. 990.
62 *Treatment of Syphilis of Central Nervous System. D. A. Haller, Boston.—p. 997.
63 *Salicylates. Renal, Functional and Morphologic Changes in Animals Following Administration of Salicylate. P. J. Hanzlik and H. T. Karsner, Cleveland.—p. 1016.
64 *Id. Further Observations on Albuminuria and Renal Functional Changes Following Administration of Full Therapeutic Doses of Salicylate. P. J. Hanzlik, R. W. Scott and T. W. Thoburn, Cleveland.—p. 1029.
65 Influence of Nonspecific Substances on Infections. J. W. Jobling, Nashville, Tenn.—p. 1042.
66 *Effect of Pituitary Injections on Blood Pressure of Febrile Patients. H. B. Schmidt, Ann Arbor, Mich.—p. 1059.
67 Diminished Blood Platelets and Marrow Insufficiency. G. R. Minot, Boston.—p. 1062.
68 Reaction of Cerebrospinal Fluid. L. D. Felton, R. G. Hussey, and S. Bayne-Jones, Baltimore.—p. 1085.

60. **Systolic Blood Pressure.**—The work reported on by Rapport was done at the Hampstead Military Hospital, London, which institution has been set aside by the British War Office for the investigation and treatment of soldiers suffering from cardiac disabilities. The conclusion drawn is that as an immediate sequence of accomplished exercise, whether that exercise is moderate in degree, or whether it calls forth a full effort on the part of the person who performs it, there is a rise of systolic blood pressure. The curve rises from a little above the original normal level to a point far above it; the rise is abrupt and has largely escaped detection on this account. This rise, in cases in which it is discovered, is spoken of by Barringer as the "delayed rise," and by him is considered to show that the exercise which produces it has overlooked the heart. With this conclusion Rapport disagreed. He says that to speak of the rise ("delayed rise") itself as an index of a change in the circulatory reaction is unsound; to speak of a delay in the full development of the rise with severe effort, is usually to speak correctly. Rapport regards Barringer's method of ascertaining the shape of the blood pressure curve to be without value, on account of the large variations in pressure which occur in the fraction of a minute following accomplished exercise.

61. **Hodgkin's Disease.**—According to Symmers, Hodgkin's disease is primarily neither an infective nor a neoplasmic lesion of the lymph nodes, but a systemic disease which expresses a predilection for lymphoid tissues, giving rise to multiple foci of growth at approximately the same time and in response to the same provocative agent. The provocative agent, whatever its nature and origin may be, causes preliminary hyperplastic changes in the lymphoid tissues and initiates disturbances in the bone marrow, characterized, among other things, by proliferation of the nongranular mononuclear cells of the lymphocytic type, eosinophils and eosinophilic myelocytes. These cells, together with the myeloplaxes, are thrown into the circulation and filtered out by the lymph nodes or deposited in them in response to chemotactic attractions, the fibrotic changes in the recipient tissue representing a purely local reactive process. The histologic changes beyond the lymphoid system proper, namely, in the liver, kidneys, etc., represent a reaction on the part of normally existing lymphomatous foci to the same toxic substance which is responsible for the disturbances in the bone marrow and for the myeloid transformation of the lymph nodes.

62. **Treatment of Syphilis.**—Haller's paper consists of a description of the preparation of mercurialized serum and of a tabulation of the results obtained from its use in forty-five patients to whom 150 doses were given, with a comparison of these results and those obtained in previous cases with salvarsanized serum. Eleven patients previously treated with salvarsanized serum were each given three or more intraspinal treatments with mercurialized serum, a total of thirty-eight doses. The effect on the Wassermann reaction, cell count and clinical symptoms was in every case equally as good as, if not better than, from the same amount of salvarsanized serum. The reactions in every case were more severe than with the salvarsanized serum.

63. **Salicylates.**—The administration of salicylate in doses corresponding to full therapeutic doses for human beings per kilogram of body weight, Hanzlik and Karsner say, causes the appearance of albumin, leukocytes, casts or castlike bodies, and sometimes red blood corpuscles, in the urine of animals (cats, dogs and one rabbit). A preexisting albuminuria is aggravated by the administration of salicylate. The albuminuria is of direct renal origin. So far as the nonprotein and urea nitrogen of the blood are concerned, there is a diminution in renal functional efficiency. Morphologically, a lesion of the kidney appears, varying in severity from simple cloudy swelling of the epithelium of the proximal convoluted tubule to extensive cloudy swelling of all the cortical parts of the tubules, associated with an acute intracapillary glomerulitis, the latter process being denominated as an acute tubular nephritis.

64. **Renal Functional Changes Following Administration of Full Doses of Salicylate.**—The administration of salicylate in full therapeutic doses invariably causes the appearance of albumin, white blood corpuscles and granular casts or castlike bodies in the urines of normal, rheumatic, nonrheumatic, febrile and afebrile persons. The albuminuria is not of febrile origin, but due directly to the drug. A preexisting albuminuria is aggravated by the administration of salicylate. So far as renal functional efficiency is concerned, there is a diminution. This is indicated by: (1) lessened water excretion [taken in connection with (2) and (3)]; (2) diminished phenolsulphonephthalein excretion, and (3) accumulation of urea nitrogen of the blood. The administration of bicarbonate together with salicylate has practically no demonstrable influence on the albuminuria and renal functional changes produced by the salicyl.

66. **Effect of Pituitary Injections on Blood Pressure of Febrile Patients.**—Twenty-seven observations were made by Schmidt on fifteen patients. Of these, six had pulmonary tuberculosis, three infectious sore throat, one exophthalmic goiter, three lobar pneumonia, one surgical shock, and one was convalescing from typhoid. From 1 to 1.5 c.c. of extract of pituitary gland was injected deep into the muscle of the arm. The blood pressures were taken several times before the injection, and thereafter at intervals of about fifteen minutes for a period of one hour or more. The pulse rate, temperature and rate of respiration were also noted. Aside from an occasional slowing of the pulse rate, which never exceeded ten beats per minute, no definite change in these occurred. Before the injection the pulse was usually of a bounding character (pointed or collapsing pulse). Following the injection it could often be felt to become smaller and more sustained. This change was usually noted in the observation made fifteen minutes after the injection, and it continued for an hour or more. The systolic blood pressure after pituitary injections was not altered in any constant or striking manner. The rise in the diastolic pressure amounted in some instances to 15 mm. Hg, or more, and this, together with its time and relative constancy, made it certain that it

was due to the action of the drug. The impression was gained, furthermore, that the rise in diastolic pressure was most striking and constant when the pulse was of a definitely pointed form. No effect on the pulse or blood pressure was observed when the pituitary extract in doses of 2 c.c., or when pituitary substance in doses of 15 grains of the desiccated gland, was administered by mouth.

Annals of Surgery, Philadelphia

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69 Surgical Experience and Surgical Knowledge. J. E. Sweet, Philadelphia.—p. 673.
70 *Results of Treatment of Lymphosarcoma by Means of Roentgen-Rays and Other Methods. A. F. Holding, New York.—p. 686.
71 Histologic Study of Circular Suture of Blood Vessels. C. Goodman, New York.—p. 693.
72 *Studies in Regeneration and Growth of Bone. B. Brooks, St. Louis.—p. 704.
73 Congenital Lipomata of Cheek; Report of Two Cases. J. Ransohoff, Cincinnati.—p. 711.
74 Case of Secondary Hemorrhage Treated by Ligation of Common Carotid Artery. W. Bartlett and O. F. McKittrick, St. Louis.—p. 715.
75 Study of Motor Disturbances Accompanying Ulcer of Stomach or Duodenum and Changes Produced by Operation. A. O. Wilensky, New York.—p. 730.
76 *Anatomic Point which Facilitates Location and Delivery of Appendix. D. Guthrie, Sayre, Pa.—p. 742.
77 Cystic Dilatation of Vermiform Appendix. P. J. Reel, Columbus.—p. 743.
78 Typhoid Spine; Report of Case. A. H. Levings, Milwaukee, Wis.—p. 747.

70. **Results of Treatment of Lymphosarcoma.**—A series of thirty-five cases of lymphosarcoma observed by Holding offers an unusual opportunity for comparing the results of different methods of treatment in this disease. The series includes several anatomic types, as lymphocytomas, large round reticulum cell sarcomas, tumors approaching atypical Hodgkin's disease in histology, and lesions approximating the chronic granulomas. It does not include any of the embryonal epithelial tumors (endotheliomas nor infectious granulomas) which frequently resemble lymphosarcoma so closely that they are diagnosed as such. The duration of the disease varied from two months to seven years. In fifteen of the cases the disease first manifested itself in the tonsil; in fourteen of the cases the disease first affected the cervical glands, and in six cases other glands in the body were first affected. Cases with primary manifestations occurring in the tonsil were most malignant. Thirty of these patients are dead or dying. Five are symptomatically well. In twenty-two patients from one to five operations had been performed, and the patients presented with postoperative recurrences. In none of the cases was excision used alone. In most of the cases several methods of treatment were used. Three patients were treated with autogenous vaccine derived from tumors excised from the patient; one patient was treated with serum from a goat which had been given immunizing doses of a diphtheroid organism isolated from the patient's tumor; one patient was treated with colloidal copper; two with other experimental methods, all of which yielded no conclusive therapeutic results. Eight patients were treated by surgical operations followed by mixed toxin treatment; of these, one has been symptom-free for four years; five are known to be dead and two disappeared from observation.

Nine patients were given mixed toxin treatment at first and grew worse; other agents resorted to were radioactive methods, and the patients made rapid improvements as soon as this change was made; one of these patients became symptom-free. The other four toxin patients who were not put on radioactive treatment did not improve. One patient was treated by mixed toxin alone; he was unimproved and is now dead. Fourteen patients were treated with mixed toxin in conjunction with other methods; six were improved; six were unimproved; two disappeared from observation. Five patients were treated with Roentgen rays alone; of these, one has been symptomatically well for three years; in two the masses disappeared but later presented in other parts of the body, and both patients are now dead; the other two patients were unimproved. Twenty-three patients in all were treated with massive doses of Roentgen rays; of these fifteen were improved. Two patients were treated with radium alone; one has been symptom-free for one year; the other was improved for a time but is now dead. Seven patients were treated with radium in conjunction with other methods; one has been symptom-free for one year; six were improved. Five patients have been symptomatically well, respectively, three years, four years, three and one-half years, one year and one year. Thirteen patients were improved. Of the thirty-five patients, nineteen are known to be dead; one is dying; five have disappeared from observation. Thirteen patients of the thirty-four were improved for periods varying from one month to one year. Twelve patients of the series were unimproved.

72. **Regeneration and Growth of Bone.**—The experiments reported on by Brooks show that sodium alizarin sulphonate when given by mouth, subcutaneously or intravenously has selective intravital staining properties, and that it stains only bone which has been but recently formed or is formed during the period the dye is in the circulation. The use of sodium alizarin sulphonate experimentally furnishes a valuable method in the study of the problems of regeneration and growth of bone.

76. **Anatomic Point which Facilitates Location and Delivery of Appendix.**—The attachment of the lower root of the mesentery opposite the sacro-iliac joint marks the point of juncture between the ileum and the cecum. By its location, Guthrie says, the appendix can be found readily and delivered without drawing any of the colon or the small intestine out of the wound. The advantages are obvious. With so little trauma to the intestine, the postoperative convalescence is made comfortable, the danger of infection is lessened, and the time of operation shortened within reasonable limits. The method can only be employed in cases in which the appendix lies free in the abdomen.

Boston Medical and Surgical Journal

June 14, CLXXVI, No. 24

79 Military Medicine; Means to Perpetuate Its Teaching in Massachusetts. P. E. Truesdale, Fall River.—p. 825.
80 Gastric and Duodenal Ulcers. J. S. Rodman, Philadelphia.—p. 834.
81 Practicing Physician and Public Health. M. E. Champion, Wollaston.—p. 840.
82 Case of Congenital Anomaly of Larynx. G. H. Powers, Boston.—p. 843.

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83 Physiologic Factors Concerned in Surgical Shock. W. B. Cannon, Boston.—p. 859.
84 *Recognition of Pancreatic Insufficiency, with Special Reference to Loewi Test. H. R. Decker, Pittsburgh.—p. 867.
85 Some Unusual Conditions Observed in Two Hundred and Forty-Five Postmortem Examinations at Danvers State Hospital. L. G. Lowrey, Boston.—p. 872.
86 Some Conditions Leading to Incorrect Diagnosis of Adenoids in Children. V. Dabney, Washington, D. C.—p. 875.
87 *Bárány's Sign in Epileptics and in Schoolchildren. E. A. Tracy, Boston.—p. 877.

84. **Pancreatic Insufficiency, Reference to Loewi Test.**—In 500 cases in which the Loewi test was applied there were eighteen positive reactions, only two of which were known to have pancreatic lesions, one, a case of carcinoma of the pancreas, the other, chronic pancreatitis associated with gallstones. In fifteen gallbladder cases there were three positive reactions. In only one of these was the pancreas involved. From this record it is apparent: (1) that the reaction is not pathognomonic of pancreatic disease, (2) that it is absent in cases which by other methods are proved to have pancreatic lesions.

87. **Bárány's Sign in Epileptics and in Children.**—Tracy examined fifty patients at the Monson State Hospital for epileptics. Bárány's sign, conjugate deviation of the eyes, was found present in twenty-three cases, the conjugation pointing to the left in thirteen of them and to the right in ten. Tracy concludes that Bárány's sign is not constant in epilepsy, when found. It is not rare in apparently normal children.

California State Journal of Medicine, San Francisco

June, XV, No. 6

88 Organized Medicine; Consideration of Some of Its California Problems. G. H. Kress, Los Angeles.—p. 186.

89 Otitic Meningitis. E. C. Sewall, San Francisco.—p. 206.
90 Present and Proposed Legislation for Prevention of Blindness. E. F. Glaser, San Francisco.—p. 213.
91 Meningitis of Nasal Origin. H. McNaught, San Francisco.—p. 217.
92 Ectopic Pregnancy; Report of Case. W. F. Jordan, Floriston.—p. 218.

Illinois Medical Journal, Chicago

June, XXXI, No. 6

93 Conquest of Cancer. A. McGlannan, Baltimore.—p. 368.
94 Boric Acid in Treatment of Pneumonia and Other Affections Caused by Diplococcus of Weichselbaum. This is the Meningococcus Not Pneumococcus. E. H. Ochsner, Chicago.—p. 371.
95 Rôle of Syphilis in Internal Medicine. A. S. Warthin, Ann Arbor, Mich.—p. 373.
96 Medical Legislation in Illinois. C. St.C. Drake, Springfield.—p. 379.
97 Tic Douloureux; Report of Case. G. W. Robinson, Kansas City, Mo.—p. 384.
98 Alcoholism as Observed at Sceleth Hospital of House of Correction with Necropsy Findings. C. E. Sceleth, Chicago.—p. 387.
99 Some Experiences with Radium. C. W. Hanford, Chicago.—p. 389.
100 Arteriosclerosis and Its Relation to Mental Diseases. E. F. Leonard, Chicago.—p. 393.
101 Cases of Folie a Deux. S. N. Clark, Kankakee.—p. 395.
102 Present Status of Epidemic Poliomyelitis. A. L. Hoyne, Chicago.—p. 401.
103 Chronic Appendicitis. G. D. J. Griffin, Chicago.—p. 403.
104 Antiseptics and Germicides; Uses and Abuses. S. J. Russell, Chicago.—p. 405.
105 Safety First in Anesthesia. T. L. Dagg, Chicago.—p. 407.

Journal of Laboratory and Clinical Medicine, St. Louis

June, II, No. 9

106 Smallpox Vaccination at University of California. J. N. Force, Berkeley, Calif.—p. 599.
107 Report on Prophylactic Vaccination with B. Typhosus, B. Paratyphosus A, and B. Paratyphosus B. W. C. Davison, Brooklyn.—p. 607.
108 Significance of Lamblia Intestinalis in Stool Examinations. A. H. Logan and A. H. Sanford, Rochester, Minn.—p. 618.
109 Chloroma; Report of Case. R. H. Boots, Pittsburgh.—p. 622.
110 Thymus. P. G. Woolley, Cincinnati.—p. 632.
111 Orthostatic Albuminuria. A. F. Beifeld, Chicago.—p. 638.
112 Diastolic Pressure in Aged. L. M. Bowes, Chicago.—p. 641.
113 Chemistry of Cerebrospinal Fluid. C. E. Kiely, Cincinnati.—p. 645.
114 Splenomegalia. J. W. Shuman, Sioux City, Iowa.—p. 647.
115 Quantitative Separation of Heroin from Organs. W. D. McNally, Chicago.—p. 649.
116 Preparation of Protein Extracts for Diagnostic Cutaneous Tests. N. S. Ferry, Detroit.—p. 655.
117 Studies of Complement; Relation to Certain Tests. N. E. Williamson, Stockton, Calif.—p. 658.

Kentucky Medical Journal, Bowling Green

June, XV, No. 6

118 Improvements in Treatment of Wounds During Present War. I. Abell, Louisville.—p. 264.
119 *Rheumatism from Modern Viewpoint. S. J. Meyers, Louisville.—p. 273.
120 Tuberculous Meningitis. J. R. Morrison, Louisville.—p. 277.
121 Then and Now. B. P. Earle, Dawson.—p. 280.
122 Radium Treatment of Cervical Cancer; Report of Case. L. W. Frank, Louisville.—p. 282.
123 Complications in Operative Treatment of Uterine Tumors. J. G. Sherrill, Louisville.—p. 284.
124 Infections of Hand; Their Diagnosis and Treatment. H. McKenna, Louisville.—p. 290.
125 Endocarditis. W. R. Burr, Auburn.—p. 293.

119. Abstracted in THE JOURNAL, Dec. 2, 1916, p. 1693.

Medical Record, New York

June 16, XCI, No. 24

126 Importance of Duodenal Alimentation in Severe Dyspepsia Occurring After Gastro-Enterostomy. M. Einhorn, New York.—p. 1023.
127 Venous Stasis and Colloidal Diffusion as Etiologic Factors of Gastroduodenal Ulcer. F. B. Turck, New York.—p. 1026.
128 Explanation and Meaning of Babinski Sign. M. Solomon, Chicago.—p. 1029.
129 Intraspinal Medication in Treatment of Syphilitic Disease of Nervous System. L. M. Gaines, Atlanta, Ga.—p. 1034.
130 Splenic Anemia, with Cirrhosis of Liver and Ascites. H. M. Moses, Brooklyn.—p. 1037.
131 Carcinoma from Standpoint of General Surgeon. C. G. Heyd, New York.—p. 1039.
132 Poisonous Principle of Poison Oak, Nonbacterial. J. B. McNair, Pasadena, Calif.—p. 1042.

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133 Constitutional Aspect of Ordinary Chronic Dyspepsia. C. S. Fischer, New York.—p. 1081.
134 Liquid Paraffin Dressings. D. H. Stewart, New York.—p. 1087.
135 Megacolon in Childhood, Its Medicosurgical Treatment. A. Peskind, Cleveland.—p. 1089.
136 Prognosis in Pulmonary Tuberculosis. P. C. Bartlett, Boston.—p. 1091.
137 Practical Value of Chemistry to Medicine. F. S. Hammett, Los Angeles.—p. 1093.

Military Surgeon, Washington, D. C.

June, XL, No. 6

138 Collection and Evacuation of Sick and Wounded from Front to Base. T. H. Goodwin.—p. 609.
139 Diagnosis of Tuberculosis in Military Service. G. E. Bushnell.—p. 620.
140 Sanitary Service of Austro-Hungarian Army in Campaign. J. H. Ford.—p. 645.
141 Epidemiologic Study of Outbreak of Measles, Camp Wilson, San Antonio, Texas. E. L. Munson.—p. 666.
142 Illinois Camp of Mobilization, Springfield, June 19 to August 7, 1916. J. Frank.—p. 680.
143 Effects of Submarine Duty on Personnel. W. W. Cress.—p. 699.
144 Administrative Technic of Antityphoid Inoculations. J. H. Allen.—p. 710.

Missouri State Medical Association Journal, St. Louis

June, XIV, No. 6

145 Significance of Nonspecific Protein Reaction in Specific Therapy. A. Sophian, Kansas City.—p. 231.
146 Blood Chemical Methods in Diagnosis and Prognosis. R. B. H. Gradwohl, St. Louis.—p. 235.
147 Roentgen Rays in Diagnosis of Gastro-Intestinal Complications. E. H. Kessler, St. Louis.—p. 239.
148 Conservative and Surgical Management of Gonorrheal Pyosalpinx. W. Kerwin, St. Louis.—p. 243.
149 Case of Solanin Poisoning from Eating Raw Potatoes. E. H. Roberts, Marshfield.—p. 247.

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June 16, CV, No. 24

150 Clinical Aspects of Diseases of Ductless Glands. J. Sailer, Philadelphia.—p. 1121.
151 Genito-Urinary Diseases and Life Assurance. B. A. Thomas, Philadelphia.—p. 1125.
152 Some Misleading Medical Fads of Time. B. Robinson, New York.—p. 1130.
153 Massage, Kinesitherapy, and Bandaging in Treatment of Displaced Semilunar Cartilages on Knee Joint. D. Graham, Boston.—p. 1130.
154 Digitalis. R. F. Ives, New York.—p. 1135.
155 Thymol Treatment of Trichinosis. M. Kahn, Pittsburgh.—p. 1137.
156 Radium Treatment of Tinnitus and Middle Ear Deafness. I. Sobotky, Boston.—p. 1138.
157 Urologic Diagnosis. F. J. Parmenter, Buffalo.—p. 1139.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

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1 Physiologic Basis of Electric Tests in Peripheral Nerve Injury. E. D. Adrian.—p. 379.
2 Use of Roentgen Rays in Great War, with New Method for Location of Foreign Bodies. A. G. Straw.—p. 392.
3 Case of Pin Swallowing. H. Black.—p. 395.

Journal of Tropical Medicine and Hygiene, London

May 15, XX, No. 10

4 *Three Cases of Venereal Granuloma Treated with Tartar Emetic. C. Bonne.—p. 109.
5 Case of Recurrent Bilharziosis. J. L. Potts.—p. 110.

4. Venereal Granuloma Treated with Tartar Emetic.—Bonne cites the case of a woman with an inoperable venereal granuloma extending into the rectum and vagina. The septum between vagina and urethra was partly destroyed, and the woman actually passed the urine into the vagina. Of both labia majora the skin on the outer side and the mucous membrane on the inner side were involved by granulomatous tissue. Part of one of the labia was elephantoid. The patient had been in the hospital for longer than a year, and had been treated locally with cauterization, ointments, etc., without any permanent benefit. Then injections of tartar emetic were given in several places wherever the very small veins could be made visible, the solution containing 1 mg. of tartar emetic in 1 c.c. of normal saline. In the first injection 60 c.c. were

given containing 60 mg. of the drug; it was preceded by 50 c.c. of normal saline, and the last traces of tartar emetic were washed out of the apparatus by another 50 c.c. The tartar emetic cannot reach the subcutaneous tissue in this way, if only good care is taken that the point of the needle is in the lumen of the vein. If this condition is fulfilled, the patient does not complain of pain either during or after the injection. The patient stood this first injection well, and after four days a second one was given of 150 c.c., followed by eight injections each of 150 c.c. at intervals of four to seven days. Already after the fourth injection the condition was improved, and after the tenth the granulomatous tissues were replaced by healthy epithelium. The woman did not get back a normal urethra and a normal vagina, of course, and also the elephantoid thickening of the labium had not disappeared, although it had diminished in size. There was still a slight mucopurulent discharge from the vulva, kept up by the abnormal passage of the urine, but the granuloma had disappeared. Equally good results were obtained in two other cases.

Medical Journal of Australia, Sydney

May 5, I, No. 18

6 Work Done by Field Ambulance in France. E. M. Ramsden.—p. 371.
7 Vincent's Angina in Liverpool Camp. H. H. Willis.—p. 373.
8 Diagnosis of Juvenile General Paralysis of Insane. W. A. T. Lind.—p. 374.
9 Huntington's Chorea. S. E. Jones.—p. 376.
10 Case of Nerve Tumor; Removal and Attempted Heterogenous Transplantation. H. F. J. Norrie.—p. 377.

May 19, No. 20

11 Nonrusting Steel and Other Instruments for Exploring, Cleansing and Dressing Wounds and for other Purposes. C. J. Heath. —p. 415.
12 War Surgery at Front. C. MacLaurin.—p. 416.
13 Raynaud's Disease. P. E. W. Smith.—p. 418.
14 Unusual Case of Vesical Calculi. C. E. Todd.—p. 420.

National Medical Journal of China, Shanghai

March, III, No. 1

15 Problems Before Medical Profession of China. W. Lien-Teh.—p. 5.
16 Nature of Plague Prototoxins. F. Eberson.—p. 10.
17 Spinal Anesthesia with Tropococain. H. A. Cheng.—p. 17.
18 Case of Pyonephrosis Caused by Impaction of Renal Calculus. C. H. Fun.—p. 20.
19 Chinese Medical Superstitions. K. C. Wong.—p. 22.

Quarterly Journal of Medicine, Oxford

April, X, No. 39

20 *Some Actions of Anesthetics Analyzed by Observation of Altered Cardiac Relations to Calcium. W. Burridge.—p. 141.
21 *Researches on Perfused Heart: Action of Strychnin, etc., on Tetanus. W. Burridge.—p. 157.
22 *Id. Actions of Epinephrin on Addison's Disease. W. Burridge. —p. 163.
23 Pathology of Dysentery in Mediterranean Expeditionary Force, 1915. G. B. Bartlett.—p. 185.
24 *Diabetes Innocens. G. Graham.—p. 245.

20. **Actions of Anesthetics.**—The anesthetics, alcohol, chloroform and ether, Burridge claims have each a twofold action on the heart: (*a*) a depressing action reached quickly on addition of drug to perfusing solution, and disappearing directly after its removal; (*b*) a favoring action which shows a time factor in its appearance and especially its disappearance. When the depressing action is present more calcium must be added to the perfusing solution to produce effects of a given intensity; that is, to evoke contractions of half the maximum possible amplitude, than is the case in absence of drug. The favoring action is associated with an opposite relation to calcium. The two actions varied with each drug and with its concentration.

21. **Action of Strychnin, etc., on Tetanus.**—During the course of certain experiments Burridge had occasion to make healthy hearts abnormal. When so made abnormal they were exposed to the action of various drugs and agencies. The experiments showed that in a particular abnormal state three drugs: strychnin, atropin and ergotoxin produced effects not observed under more normal conditions. In the normal perfused heart each of these drugs in large doses depresses the amplitude of contraction, the usual view of the action regarding it as a weakening of the muscle fibers. Burridge did not find, however, that the depressing action of these drugs on spontaneous contractility was accompanied by any corresponding diminution in the amplitude of the contraction evoked by potassium chlorid; that is, the contractile substance can still contract fully. He did find that when their depressing action was present, the heart became less responsive to calcium than was the case before, and that their depressing action could be overcome temporarily by adding more calcium to the perfusing solution. It was also antagonized by epinephrin and digitalis. From the conditions governing the production of this abnormality, and the conditions governing its removal, it is concluded that the particular effect produced by these drugs follows on an ability on their part to cause a degree of relative calcification of the tissues. Tissues brought under the influence of these drugs take up more calcium from the perfusing solution than would otherwise be the case.

22. **Actions of Epinephrin on Addison's Disease.**—Burridge found that epinephrin has a twofold action on the frog's heart, a primary depressing action resembling inhibition, and an augmenting action, the sympathomimetic action. Three factors are found to be concerned in the depressing action of epinephrin. The relations between epinephrin and calcium are fourfold. The evidence is given that traces of epinephrin render balance between the constituents of an inorganic saline perfusing solution of secondary importance in regard to its suitability as a medium for the manifestation of cardiac activity. It is shown that the behavior of a heart perfused with a well balanced Ringer's solution never approximates to the behavior of the blood containing heart and that the change takes place immediately after the one solution replaces the other. It is shown that as inorganic perfusing solutions become unbalanced in a certain direction, so the behavior of the heart on them tends to approximate to that of the blood containing heart. Such solutions contained amounts of potassium sufficient to interfere with cardiac activity. Traces of epinephrin rendered them capable of maintaining cardiac activity and of preserving in great measure the resemblances between the behavior of the heart perfused with them and of the heart containing blood. On the basis of these experiments it is suggested that the proportions between the inorganic constituents of blood are such as to render it an unsuitable medium for the manifestation of cardiac activity except in presence of epinephrin. The origin of certain symptoms of Addison's disease is traced to such lack of balance.

24. **Diabetes Innocens.**—Five cases of an innocent type of glycosuria which is not associated with renal disease are cited by Graham. There are at least two types of this disease: (*a*) in cases in which the output of the sugar is very small and is not appreciably altered by a dose of sugar; (*b*) in cases in which the output of sugar is rather greater and is increased to a certain extent by a dose of sugar; the level of the blood sugar is also appreciably altered by the dose of sugar. The relation of the amount of sugar excreted and of the amount of sugar in the blood suggests that the sugar is actively excreted by the kidney. The prognosis is good. The diagnosis should only be made after careful sugar tests.

Archives de Médecine des Enfants, Paris

May, XX, No. 5, pp. 225-280

25 *Different Character of Measles in Town and Country. J. Camescasse.—p. 225.
26 *Antigonococcus Vaccine in Treatment of Vulvovaginitis in Children. Condat.—p. 245.
27 Mild Dacryocystitis Complicated with Purulent Meningitis and Sinus Phlebitis. Condat.—p. 254.
28 *Adenosarcoma of Right Kidney in Girl of Six. E. Kirmisson and Trétiakoff.—p. 257.
29 Present Status of Epidemiology of Whooping Cough. J. Comby. —p. 263.

25. **Measles Milder in the Country.**—Camescasse declares that his experience with measles has convinced him that city children with measles or having been exposed to it should be sent to some hospital in a rural district. Measles in country children always ran an extremely mild course in his practice as a country practitioner. He has also been impressed

with the similar mildness of the course of the disease since he has been in charge of a hospital in the country near Paris. If we cannot suppress measles entirely, we can at least simplify it, he remarks. His dream, he says, is to have some accessible institution in the woods, with an automobile to pick up in the city the children with measles and those who have been exposed. Measles in itself is bad enough for slum children, but its chief danger is that it throws down the barriers against tuberculosis. If this dream of his could be realized, he adds, the great reduction in the mortality as a whole which would result, he is convinced, might justify the transference to the country of a whole schoolroom of children and their teacher when measles threatens.

26. **Vaccine Therapy of Vulvovaginitis.** — Condat here reports twenty-four additional cases, bringing to forty the number of little girls with vulvovaginitis whom she has treated with antigonococcus vaccine. She says that it has been constantly effectual; all were cured with one exception. This was a child of over 7, infected by its mother. The vulvovaginitis had kept up for a year, showing no improvement under vaginal injections of potassium permanganate. The thick discharge grew thin and insignificant in the course of the vaccine therapy, but a complete cure was not realized even in a three months' course of the vaccine. In five cases four or six injections answered the purpose; others required up to sixteen and a few still more. In the first series, the children were in the institution and the repose aided in the cure, so that an average of seven injections was all that was necessary. The children were outpatients in this second series, and some had long distances to walk, which rendered conditions for healing less favorable. The treatment was more successful in the younger children, from 18 months to 2 or 4 years old, as the affection was comparatively recent. In older girls it may have lasted a long time before it is discovered, and it is harder to dislodge. There has been no recurrence in any of the children, but two have returned with new infection. It was promptly aborted with two injections of the vaccine. The vaccine is injected into the muscles of the outer front of the thigh. She makes three injections a week until the discharge begins to grow less, then two and then one a week. The course requires from two weeks to an average of two months. Vulvovaginitis in little girls seems to be more frequently encountered now than before the war.

28. **Adenosarcoma of Right Kidney in Girl of Six.**—The child was brought to the hospital with the diagnosis of acute appendicitis, but the trouble proved to be pneumonia. As this subsided the tumor was discovered and the kidney involved was successfully removed. It was evidently of embryonal origin and had developed malignant features only recently.

Archives Médicales Belges, Paris

April, LXX, No. 4, pp. 289-384

30 *Current Anomalies of the Body. A. Brachet.—p. 289.
31 War Wound of Neck with Claude Bernard-Horner Syndrome. H. Burger.—p. 309.
32 Factitious Conjunctivitis. E. Rasquin.—p. 321.
33 Present Status of Heart Block. H. Fredericq.—p. 326.

30. **Current Anomalies of the Body.**—Brachet is professor of anatomy at the University of Brussels, and he here describes various anomalies of the skeleton, muscles, nervous and vascular systems. He refers only to current ones such as are constantly encountered in the dissecting room, supernumerary or lacking muscles, abnormal location or bifurcation of some peripheral nerve, vein or artery. It is possible, he suggests, that the workings of Mendelian laws may be traced in these anomalies.

Journal de Médecine de Bordeaux

March, LXXXVIII, No. 4, pp. 61-80

34 *Technic for Amputations. Fieux.—p. 63.
35 *Advanced Dressing Station. (Poste de secours.) Cheyron.—p. 68.
36 *Gathering in the Wounded. H. G. Morin.—p. 71.

34. **Technic for Amputations.**—Fieux bases his technic on study of the present condition of men whom he has had to amputate in the course of the war. In case of much shock he injects hot saline through a conical glass cannula introduced into the large vein of the stump. He sutures the stump, when the surgical toilet can be complete, under forcible eversion, exploring every crevice as far up as it is possible to separate tissues with the fingers. In the twenty-six cases thus treated, he had to cut two or three of the stitches in six cases, but this did not interfere with the regular healing. The surgeon, himself, must watch over the case for the first five or six days, ready to interfere at the slightest sign that all is not going well.

35. **The Advanced Dressing Station During an Offensive.**—Cheyron's long experience is here crystallized into directions for the equipment, placing and management of the first aid stations and arrangements for bringing in the wounded. He writes from the standpoint of the medical officer of a battalion. It is not an instructive position, as the surgeon is not able to trace further the cases that pass through his hands. He regards Mencière's iodoform-Peruvian balsam spray as extremely valuable for first aid work when the wounded are coming in in large numbers. (It was described in these columns Dec. 4, 1915, p. 2040.) After the surgical toilet of the wound, he cleans the vicinity with gasoline, and then sprays the Mencière mixture copiously into all the cracks and crevices of the wound. This can be done by any one. It seems to embalm the tissues in the wound, and wards off septicemia, tetanus and gangrene. Every wounded man should be refreshed with tea, coffee, rum, quinin or kola, and measures applied to keep him warm.

36. **Gathering in the Wounded.**—Morin describes the methods that have been worked out to ensure the greatest economy of time, of helpers and of material during an offensive movement of the troops.

Lyon Médical

May, CXXVI, No. 5, pp. 205-252

37 *Symptoms from Pleura, Lungs and Pericardium in the Course of Acute Articular Rheumatism. J. Mollard and M. Favre.—p. 205.
38 *Ileocecal Tuberculosis. Guérin.—p. 214.
39 Aneurysm of Internal Carotid and Jugular Bulb. M. Patel and M. Lannois.—p. 227.
40 Emetin Treatment of Amebic Dysentery. C. Garin.—p. 249.

37. **The Pleura and Lungs in Acute Rheumatism.**—Mollard and Favre declare that the pleurisy of acute rheumatism has certain characteristics which distinguish it and give the clue for effectual treatment, as it usually yields promptly to the salicylates. Left untreated, serious lesions may be installed which might easily have been averted. The rapid invasion of the pleura, the fact that both sides are involved, the association with congestion of the lungs and with pericarditis without effusion, and the complete subsidence without sequels are the main features of this rheumatismal pleurisy. Even without joint trouble, bilateral pleurisy of this type should suggest the true cause, but whenever symptoms on the part of the pleura accompany joint trouble, the indications for treatment are clear. The pleurisy may persist after recovery from the acute rheumatism, or it may develop with only latent or no joint involvement. In this event it is likely to be mistaken for a tuberculous affection and thus fail to get the treatment it requires. He knows of instances of this, the result being established endocarditis, adhesive pericarditis, etc. Other features are the fixity and the long duration of the pleural effusion, for weeks or a month or more, its moderate amount, the invariable accompanying congestion in the lungs and the usually mild character of the pains in the chest. Under sodium salicylate the pleurisy is arrested and the lung symptoms retrogress. The pleural effusion takes longer to subside.

38. **Ileocecal Tuberculosis.**—In three of the six cases described the diagnosis of appendicitis had been made at first. When the appendix is removed in such cases, it may be found normal notwithstanding the two or three or more years of discomfort and pains in the appendix region. The cecum at the appendicectomy may look merely a little redder than usual. If the stretch involved had been resected at this time the disease would have been eradicated in an early stage. Even when the cecum looks inflamed, this may be merely an inflammatory reaction to appendicitis. Tuffier has reported such a case, the inflammatory tumor subsiding completely

after mere ileocolic anastomosis. Concomitant pulmonary tuberculosis may give the clue. Resection of the stretch of bowel involved is the only safe treatment; the incision should be along the outer margin of the rectus muscle. Separation and hemostasis may be long and difficult, especially if there is much fat around the bowel.

Paris Médical

May 12, VII, No. 19, pp. 389-404

41 Amebic Dysentery in France. C. Dopter.—p. 389.
42 *Periods of Subnormal Temperature as Epileptic Equivalents after Trephining. P. Carnot and A. de Kerdrel.—p. 395.
43 *Reduction of Fractures under Screen Control. F. Masmonteil. —p. 398.
44 Typhoid Gangrene in Girl of Five Requiring Amputation. A. Vinache.—p. 402.

42. **Periods of Subnormal Temperature as Epileptic Equivalents.**—The case related throws light on the question of the existence of a heat center in the cortex. The young man had been trephined for a bullet wound of the forehead, and seven months later his temperature dropped below normal for several days at a time, down to 34.2 C. (93.5 F.). This occurred several times, preceding or substituting attacks of Bravais-Jacksonian epilepsy, symptomatic of irritation of the cortex. The trephining followed two hours after the frontal bone had been fractured and part driven in. There was hemiplegia at first, but no aphasia, no headache, no visual disturbances or convulsions for seven months. Then the epileptic seizures and hypothermia developed, with painful contracture, all occurring in connection with each other, at irregular intervals, evidently the result of cicatricial pressure on the frontal lobe.

43. **Reduction of Fractures Under Screen Control.**—Masmonteil combines continuous extension with lateral traction and suspension, with screen control of conditions as compared with preceding radiographs. He gives an illustrated description of the modifications all this requires in the usual apparatus.

Presse Médicale, Paris

April 16, XXV, No. 30, pp. 217-232

45 Apparatus for Compound Fracture of the Humerus with Injury of the Elbow. C. Coulon.—Title page.
46 *War Neurology. Editorial.—p. 217.
47 Resection of Shoulder by Posterior Incision. J. de Fourmestraux. —p. 220.
48 Injection of Arsenobenzol in Minimal Dilution. M. Favre and Massia.—p. 221.
49 *Carbon Dioxid. (L'anhydride carbonique.) H. Roger.—p. 222.

46. **Present Status of War Neurology.**—This comprehensive review is peculiar in that while recent discoveries and achievements in neurology are described in detail no names are mentioned, and the article is unsigned. It opens with the statement: "If the tax on war profits were applicable to scientific acquisitions, then neurology of all the domains of medicine would have to pay the heaviest tax. For during the last three years it has been enriched in a surprising manner. The war has applied to man experiences hitherto made only on laboratory animals, and the creation of 'neurologic centers' for the wounded has resulted in definite conclusions by the various groups of experts at these centers, and the conclusions are practically identical." The principal scientific truths thus aquired and their practical application are discussed in detail in respect to the brain, spinal cord and nerves, reflex paralysis, neuroses and psychoneuroses. Prostheses to correct sciatic and radial paralysis are among the later acquisitions. The neurologic centers have proved particularly useful in detecting and sifting out the hysteria element. Very few cases of hysteria get past them. It is remarkable that the principal forms of hysteria manifestations are found to be the same at all times, at all ages and in all countries, and persuasive electrotherapy and imperiously applied psychotherapy are proving as effectual for war hysteria as under other conditions.

49. **Carbon Dioxid.**—Roger reviews our present knowledge in regard to the physiologic properties of carbon dioxid and the possibilities of a therapeutic action from it. He also discusses the variations in alveolar carbon dioxid pressure in different diseases, and urges further study of the combination of carbon dioxid with oxygen recommended by Levi in THE JOURNAL, 1912, **58,** 773. It is possible, he suggests, that this mixture might prove useful in gas cases.

Progrès Médical, Paris

May 12, XXXII, No. 19, pp. 153-162

50 Treatment of War Deafness. Marage.—p. 155.
51 Tetanus Restricted to Wounded Leg. H. Roger.—p. 157.
52 War Wounds of the Eyes. Bourdier.—p. 160. Continuation.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 12, XLVII, No. 19, pp. 593-624

53 *Treatment of Gonorrhea in Swiss Military Hospital. G. Huber Pestalozzi.—p 593.
54 *Heredity of Dementia Praecox. W. Boven.—p. 605.

53. **Treatment of Gonorrhea.**—The experience at the Solothurn military hospital confirms the importance of repose and a bland diet as factors in conquering gonorrhea. Disinfecting and astringent injections were the reliance in treatment. To decide when the men were actually cured, four means of reactivation were tried: sudden stoppage of all treatment; introduction of a No. 20 Beniqué catheter, possibly massaging over it, or an irritating injection of a 1 or 2 per cent. solution of silver nitrate. The drinking of beer was at one time used as a provocative test, but did not prove reliable. In 25 per cent. of the acute cases no further gonococci could be found after ten or twelve days; in 25 per cent. after two or three weeks. In 10 per cent. of the chronic and subacute cases the disease proved refractory.

54. **Heredity of Dementia Praecox.**—Boven describes some recent statistical research on this subject by Rudin. He found 15.86 per cent. cases of dementia praecox among the 4,823 brothers and sisters in 701 families, the father and mother not insane but of the Mendelian type D R × D R. Eliminating the children that had died young or had not reached the critical age, the ratio between the healthy and the dementia members of the families was 24.67 per cent. Applying Weinberg's method of statistical correction, brings this proportion to 4.48 per cent. In another group of thirty-four families with 166 offspring, one of the parents having dementia praecox, the Weinberg ratio is 6.18 per cent. Boven cites these figures as showing that Mendelian laws of heredity do not apply to dementia praecox, at least. The children in these families included 2,176 males and 2,090 females, a normal proportion between the sexes. Rudin mentions that 154 of the parents with the predisposition to dementia praecox married a second time, and there was only one case of dementia praecox among the children of their second marriage.

Gazzetta degli Ospedali e delle Cliniche, Milan

April 12, XXXVIII, No. 29, pp. 449-464

55 *Atypical Convalescent Stage after Acute Infectious Diseases. U. Baccarani.—p. 449.

April 15, No. 30, pp. 465-480

56 Horn in Eyebrow of Man of Sixty-Four. (Keratiasis cutanea.) G. Matteucci.—p. 465.
57 The Medical Profession after the War. E. Villa.—p. 475.

55. **Atypical Convalescence.**—Baccarani refers to what he calls postinfectious marasmus, the patient, although his infectious disease is over, does not gain but grows weaker, without appetite, the temperature low. This phase is usually transient, and then he enters on convalescence. But in rare cases it is progressive and the cachexia is fatal. He reports two cases of each type, both after typhoid, and points out certain features which render it probable that the trouble with these atypical forms of convalescence is an upset in the system of glands with an internal secretion, but especially of the suprarenals. Conditions are like those in the aged when the suprarenal system is worn out, so that postinfectious cachexia might be called fatal acute old age. The infectious diseases with a protracted course, like typhoid, are the ones most likely to present this atypical convalescence, especially when the cardiovascular symptoms have predominated in the clinical picture. He has noticed that this tendency to atypical convalescence may manifest itself anew

after each infectious disease the patient has to pass through. The cases cited as examples of the transient type were in older children, the fatal case in a man of 69, previously healthy.

Policlinico, Rome

May 13, XXIV, No. 20, pp. 641-668

58 *Determination of Pentose in the Urine. G. Testoni.—p. 641.
59 *Utility of Roentgen Examination after War Wounds. P. Masserini.—p. 644. Commenced in No. 18, p. 569.
60 *Hernia and Defective Teeth and Heart as Affecting Military Service. G. Galli.—p. 652.

April, Surgical Section No. 4, pp. 145-192

61 *Traumatic Hernia of the Brain. O. Tenani.—p. 145.
62 *Frost-Bite of the Feet. (Osservazioni sulla cura delle congelazioni gravi dei piedi.) A. Chiasserini.—p. 157. (Alterazioni istologiche dei vasi nelle congelazioni.) G. Cavina.—p. 164.
63 Incarcerated Diaphragmatic Hernia. G. Simoncelli.—p. 174.
64 Solitary Cysts of the Kidneys. M. Magnini.—p. 180. To be continued.

58. **Determination of Pentose in the Urine.**—Testoni states that the hydrolysis test for pentose which he describes is so sensitive that it reveals 0.5 mg. of pentose in the urine, even in diabetic urine. For the qualitative test, he decolors 10 c.c. of urine by heating with a little blood charcoal, and evaporates the filtrate to 5 c.c. This is mixed with 9 c.c. of a tepid 0.25 per cent. solution of phloroglucin in glacial acetic acid. Then he adds 1 c.c. of concentrated hydrochloric acid and keeps the tube for thirty minutes in water at a constant temperature of 50 C. Very soon the characteristic color reaction appears, the tint changing to a handsome cherry-red. If the urine contains pentoses alone, there is no need to evaporate it, taking merely 1 c.c. and adding directly 15 c.c. of the phloroglucin solution and 2 c.c. of the hydrochloric acid and bringing just to the boiling point for a few minutes. This test can be made quantitative by preparing a standard solution, as above, with some pentose instead of urine, and comparing the tint.

59. **Roentgen Examination of the Wounded.**—Masserini concludes this long review of the experiences with Roentgen work for the wounded by warning that too much must not be expected of Roentgen examination. The best results are obtained when the radiologist and the physician who had studied the case can work together. He declares that every radiologist should have a practical medical experience, while every physician should be something of a roentgenologist.

60. **Hernia and Defective Teeth and Heart as Affecting Military Service.**—Galli quotes from the military regulations of the different belligerent countries showing that hernia, loss of teeth and heart disease need not summarily exclude the applicant from military service. The French regulations stipulate that exemption is necessary only if mastication is difficult or incomplete from loss or decay of teeth, accompanied by softening, ulceration and fungosities of the gums not susceptible of being cured by suitable treatment. The loss of a large number of teeth, with the gums sound, *may* serve as the ground for classing the man in the auxiliary service. He states that the German regulations, as long ago as 1909 contained similar provisions. In both France and Germany, he adds, hernia is not considered a ground for rejection unless the inguinal hernia is very large, irreducible on account of adhesions, or difficult to maintain reduced, with the canal much stretched and the anterior abdominal wall weak. In regard to heart disease, similar views prevail, he relates, not only in France and Germany but in Switzerland, Russia and England, namely, that men with heart disease need not necessarily be excluded from the army. He refers to Sir James Mackenzie's "The Recruit's Heart. Memorandum for Medical Examiners." This advocates accepting the recruit if the young man presents no disturbance on the part of the heart during fatiguing test exercises, and if the heart outline is normal, even if he may have impressive objective symptoms such as arrhythmia and murmurs. Galli agrees with him except for the restriction that recruits of this type should be assigned only to the less strenuous posts. "Time alone will show, when the history of the war comes to be written, whether Mackenzie's ultra liberal interpretation is just or not."

61. **Hernia of Brain Tissue.**—Tenani's experience with sixteen cases of hernia of brain showed that what he calls hernia of the first degree subsides spontaneously. When the hernia is stationary, the opening in the skull is made larger, thus relieving the congestion in the protruding part of the brain, and the hernia then subsides, and the brain is freed from its adhesion to parts around. In reference to treatment of progressive hernia, he says that the brain seems to stand the loss of substance remarkably well, and the operative wound soon heals as a rule, but the patient is left below par both in the physical and psychic sphere, emotionally unstable. He used various materials for repairing the breach in the skull; any nonabsorbable substance seems to answer the purpose once fixed immovably in place. The repair should not be attempted until asepsis can be counted on. In prevention of hernia he uses a disk of celluloid, fitted smoothly into the gap, with a small crescentic incision at one edge permitting the passage of a wick of gauze introduced under the dura. The gauze is renewed frequently until there is no further discharge from the dura. Then the disk is taken out and the skin sutured over the gap. By this means drainage is secured, while the brain does not adhere to the smooth surface of the celluloid. He never had any septic complications in his cases.

62. **Trench Foot.**—The gangrene with trench frostbite seems to be the result of thrombosis of the vessels plus hyperplasia of the intima, an actual proliferating endarteritis and endophlebitis.

Riforma Medica, Naples

May 5, XXXIII, No. 18, pp. 477-504

65 *Unfermentable Diet in Gastro-Intestinal Dyspepsia. G. Moruzzi.—p. 477.
66 Traumatic Pseudo-Arthritis of the Knee. A. Mori.—p. 480. To be continued.
67 *Paradoxic Oculocardiac Reflex. O. Cantelli.—p. 487.
68 Present Status of Glycuronuria in Liver Disease. L. Ferrannini.—p. 490.

65. **Unfermentable Diet.**—Moruzzi remarks that a protein diet in acid dyspepsia and a starch diet in alkaline dyspepsia are effectual as far as they go, but a third diet is needed for mixed dyspepsias, generally of gastric origin. The diet should be incapable of fermentation, and he says that this condition is realized by a combination of whey and peptone, fermented with very active lactic acid bacilli, and then sterilized. He gives up to 800 c.c. a day of this, with from three to five yolks of eggs. In four or five days, ten or fifteen at most, conditions in the digestive tract return to clinically normal. As there is no putrefaction or fermentation on this food, the inflammatory processes in the intestine die out. He gives no further details as to the preparation of this "third diet." The principle is merely the utilization of the sterilized products of lactic fermentation.

67. **Paradoxic Oculocardiac Reflex.**—Cantelli refers to cases in which the heart beat and pulse are accelerated by pressure on the eyeballs, and this persists for some time afterward. He discusses the mechanism of this phenomenon and remarks that it indicates some possibly still latent deficiency of the cardiovascular apparatus, suggesting necessity for caution in respect to physical and emotional strain.

Rivista Critica di Clinica Medica, Florence

May 19, XVIII, No. 20, pp. 221-228

69 *Chronic Primary War Polymyositis with Atrophy. B. Graziadei.—p. 221. To be continued.

69. **War Polymyositis.**—Graziadei reports a few typical cases of this painful affection of the muscles in men who have been exposed to cold and wet on the firing line, even when not in the trenches. In one case the first trouble was in the knees, but this improved after six weeks in the hospital so the man resumed his place at the front, but in two weeks the knees grew painful again as also the muscles of face, neck and trunk, which were rigid and hard, the pains increased at the slightest movements. He was unable to chew or get up, and there was fever up to 104 F. with edema of the feet and eyelids, but the urine seemed to be normal. Small hard nodules appeared on the skin but subsided in a

few days and then reappeared. During and after this phase of what seemed to be acute febrile rheumatism, intense pains and contraction of the muscular masses rendered painful and difficult any attempt to move them. Later they atrophied to a marked degree. Gradual improvement set in after a few months. The toes were still stiff and painful by the end of the second year but the man is able to get around with a cane; the arms can be moved normally.

Prensa Medica Argentina, Buenos Aires

May '0, III, No. 34, pp. 365-376

70 *Anastomosis between Gallbladder and Stomach in Treatment of Gastric and Duodenal Ulcers. P. Escudero and E. Finochietto. —p. 365.
71 Facilities in Argentina for Climatic Treatment and Prophylaxis of Pulmonary Tuberculosis. T. Castellano.—p. 367.
72 Acute Febrile Cyclic Pemphigus. J. C. Navarro.—p. 468.
73 *Hemolysins in Spiders' Eggs. (Nuevos datos sobre las hemolisinas de las arañas.) B. A. Houssay.—p. 370.
74 Toxicologic Study of Partonalgia. A. Buzzo.—p. 371.
75 Electrocoagulation in Treatment of Tumors in the Bladder. J. Sabatini.—p. 372. To be continued.

70. **Cholecystogastric Fistula in Treatment of Gastric or Duodenal Ulcer.**—Escudero and Finochietta have noticed that the persons who benefit by gastro-enterostomy are usually those who had hyperchlorhydria before, but later have hypochlorhydria. Their analysis of the cases showed hyperchlorhydria in every case of recurrence of the ulcer. They agree with Paterson and others that the flow of bile and pancreatic juice into the stomach, after the gastro-enterostomy, is what modifies conditions so the ulcer can heal. On this premise, they diverted bile into the stomach by an anastomosis between the stomach and gallbladder, hoping thus to realize the advantages of a gastro-enterostomy without its drawbacks. This operation, they say, respects the gastroduodenal functioning and allows the bile to enter the duodenum by the natural route. It merely adds to the previous condition the presence of bile in the stomach during the course of gastric digestion. They say the operation is simple and easy, and does not interfere with a later gastro-enterostomy if this is deemed necessary. They give an illustration of the technic as they have applied it in two cases of duodenal ulcer. Five and a half months have elapsed since in the first case, and there have been no symptoms at any time. The gastric acidity has been reduced from 2.25 to 0.46 and the weight increased over 15 pounds in thirty-three days. The influx of bile depends on the food; none enters the stomach after drinking water or taking an Ewald test meal, but water and oil or an ordinary meal is followed by the arrival of bile after the first hour. Roentgenoscopy shows that the stomach is evacuated in less than six hours.

73. **Hemolysins in Spiders' Eggs.**—Houssay has found hemolysins in the eggs of three species of Brazilian spiders. Other scientists have brought the list up to fourteen. The hemolytic action of the species here studied seems to be annulled by raw milk. Heating the milk, even to 62 C. (143 F.) deprives it of this property.

Semana Medica, Buenos Aires

April 5, XXIV, No. 14, pp. 399-430

76 Honors for Dr. José Penna. R. Kraus and others.—p. 399. (See THE JOURNAL, May 12, 1917, p. 1420.)
77 Present Status of Chronic Nephritis. (Fisio-patologia del brightismo.) L. J. Facio.—p. 411. To be continued.
78 Gastrulation in Mammals. M. Fernandez.—p. 420.
79 Lymphocytosis in Syphilitics. Mayer and Gourdy.—p. 427. Continuation.

Siglo Médico, Madrid

May 12, LXIV, No. 3309, pp. 325-344

80 *Infarcts and Stones in the Kidneys without Symptoms. A. P. Martin.—p. 325.

80. **Symptomless Renal Lithiasis.**—Martin relates that a new-born infant was sent to the hospital for an operation for imperforate urethra, as it had voided no urine during its three days of life. The child was small but seemed otherwise normal. He introduced a grooved sound into the urethra, and a large quantity of "uric sand" escaped through the groove, forming a paste with a drop or so of urine. He applied rectal infusion of a solution of sugar by the drop method, and the next day 5 or 6 gm. of urine was voided containing uric acid crystals. The child nursed well and within two days was voiding apparently normal urine and continued to increase in weight. The rise in blood pressure, thanks to the injection of the sugar solution, overcame and swept out the uric acid crystals which had evidently been clogging the outlet to one or both kidneys. He queries what will be the future fate of infants born with these so-called uric infarcts. Some permanent damage may be left when the uric precipitate is extremely abundant as in some of the cases on record. It may be the nucleus for stones later. Roentgenoscopy is showing that latent, that is, symptomless kidney stones are far from rare, although never suspected until infection becomes installed. An instructive case of this is reported. A robust young athlete developed profuse suppuration in one kidney as a complication of recent gonorrhea, but there was no fever or hematuria and only extremely slight systemic disturbance. Roentgenoscopy revealed fourteen stones, at least, in the kidney. They had evidently developed by concretion on infarcts dating from the earliest infancy. This was manifest from their movability, etc. At the age of 2 and 3 he had voided at one time a dark colored urine, and repeatedly later the urine deposited a whitish gelatinous sediment. After the age of 3 the urine had been constantly apparently normal until the gonorrhea started the kidney trouble. Gonococci and colon bacilli were found in the urine.

Russkiy Vrach, Petrograd

XVI, No. 8, pp. 169-192

81 The So-Called Functional Treatment of Fractures, from the Orthopedic Standpoint. G. I. Turner.—p. 169.
82 Dissociation of Auricle and Ventricle Functioning with Adams-Stokes Disease. N. I. Leporsky.—p. 176. To be continued.
83 *Burns in Children. (Ozhogi u dietei.) N. R. Blumenau.—p. 179. Commenced in No. 7, p. 158.
84 *Digestion of Different Kinds of Food after Gastro-Enterostomy. (Perevarivanie razn. rodov pishtshi pri dvukhustnom zheludkie.) A. D. Volkoff and E. T. Klopfer.—p. 184.
85 The Fever Curve in Typhus. (O likhoradkie pri sipnom tifie.) L. A. Silberberg.—p. 185.

83. **Burns in Children.**—Blumenau reviews the experiences of eighteen years at a Petrograd hospital with 186 cases of burns in children from 5 months to 13 years old. Under 1 year old, 50 per cent. of the children succumbed to their burns, but only 20 per cent. at 5. Over 66 per cent. of all the fatalities were in the children under 6. Over 43 per cent. died in the first twenty-four hours; over 41 per cent. within four days, and over 14 per cent. from the sixth to the twenty-first day. Vomiting was a prominent symptom in 50 per cent. of the cases that terminated fatally while it occurred only in 3.6 per cent. of the nonfatal cases. The temperature was below normal only in 6 cases; these children all died within fifteen hours. Over 23 per cent. of the total children had convulsions, but the convulsions developed between the second and fourth day in 50 per cent. of the cases with convulsions; during the first twenty-four hours only in 13 per cent. Albuminuria was extremely rare, and only very slight. A fine rash was observed in 2 per cent. of the cases by the third to fifth day and a coarse rash in a still smaller percentage, but 12.3 per cent. developed an eruption exactly like that of scarlet fever. Voinoff had the same in 11 per cent. of the 318 cases of burns in children in his service.

This scarlet fever eruption developed usually within the first four days in both series. In Blumenau's cases the tongue had the characteristic scarlatinal aspect only in 50 per cent. Desquamation followed in 66 per cent. Fifteen of the children with the eruption suggesting scarlet fever were placed in the scarlet fever ward. One succumbed to otitis and mastoid mischief, and 2 to pneumonia the forty-fourth and twenty-eighth days. The others recovered, but 2 had a return of the scarlet fever, the fifteenth and sixteenth days. The eruption and pharyngitis then lasted about four days, and no desquamation was noticed. The burn in these children involved 6 per cent. and 12 per cent. of the surface of the body; in the 3 children that died, 35, 30 and 5 per cent. In the total 23 children with the eruption of the scarlet fever

type, vomiting occurred in 17.3 per cent. The throat seemed to be normal in 3 of the 23 cases; in 5 there was only slight redness, in the others the redness was pronounced. The clinical picture of the scarlatinal eruption in these cases was thus that so often described as "wound scarlet fever." Voinoff's experience was quite different. The mortality in his 35 cases was over 30 per cent.; the eruption was intense and lasted sometimes for eight days; the tongue and throat were characteristic of scarlet fever and 15 per cent. of the children had necrotic sore throat. Complications of various kinds such as may accompany scarlet fever, were observed in 73.6 per cent. In short, these children had true scarlet fever. They transmitted scarlet fever to others, which never occurred in Blumenau's series. Blumenau presents further evidence to prove that with wound or burn scarlet fever the germs entering by this unusual route are comparatively non-virulent, but at the same time they serve—like a vaccine—to protect against the more virulent. This, he says, seems to be the only plausible explanation for the nondevelopment of true scarlet fever in the 15 children placed in the scarlet fever ward. He urges that children with burns and this scarlatiniform eruption should be isolated in a glass "box" or separate room and not be sent to the contagious ward unless pronounced symptoms develop.

Necropsy was possible only in 16 of the 54 fatal cases among Blumenau's 186 cases. It failed to reveal any internal lesions apparently capable alone of causing death, and he discusses the various theories that have been advanced to explain the early death after burns, and methods of treatment. In the first twenty-four hours the collapse may prove fatal, and this should be combated with camphor, caffein and digitalis. After the first day, the danger is from absorption of poisons from the dead tissues in the wound. Saline infusion with 1 per cent. sodium bicarbonate in a vein or by the drip method, 1 to 4 liters a day, is useful. Lieber warns against morphin as liable to depress the heart, unless the burn involves more than a third of the surface and the outlook is hopeless. Some advise the continuous bath to wash away the toxins in the burns, but Lieber warns that it may reduce the tonus of the vessels and thus hamper the already suffering heart action. To neutralize the methyl guaninin formed in the burn, Vogt and Heyde recommended (1915) atropin and an isotonic solution of calcium chlorid, cutting away necrotic tissue. Schöne scrubs with a hard brush and soap under general anesthesia. Rovsing also cleans the burned area under general anesthesia, using soap, water and phenol in alcohol, sterilizing the surrounding skin with mercuric chlorid. Then he applies a layer of rubber tissue, projecting 0.5 cm. beyond the edges of the burned area, and over this medicated gauze, then absorbent gauze and a bandage. In the 60 cases Rovsing has reported, healing was prompt and without contractures. Blumenau does not specify the measures that were used in treatment in the 186 cases he here analyzes.

84. **Capacity for Digestion of Different Kinds of Food After Gastro-Enterostomy.**—The experiments were made on dogs and some of the metabolic findings are tabulated in this preliminary communication.

Actae Scholae Medicinalis Universitatis Imp., Kioto

I, No. IV, pp. 413-489. German edition

86 *Action of Inosit and Similar Bodies on the Elimination of Glucuronic Acid. Y. Sasaki.—p. 413.
87 *Elimination of Aromatic Oxyacids in Different Diseases, especially in Nephritis. S. Hara.—p. 425.
88 Asymmetrical Cleavage of Racemic Polypeptids by Killed Bacteria. L. T. Mito.—p. 433.
89 *Asymmetric Cleavage of Racemic Tyrosin by Bacilli. M. Tsudji.—p. 439.
90 Biologic Production of d-Tyrosin. M. Tsudji.—p. 439.
91 *Thymotoxic Serum. M. Ogata.—p. 449.
92 The Principles of the Independent Function and of the Reciprocal Influence of Every Part of the Common Visual Field. G. Kuroda.—p. 473. In English.

86. **Action of Inosite and Similar Aromatic Bodies on the Animal Organism.**—Sasaki reports experimental research on rabbits and mice to determine the influence on the elimination of the ethereal sulphates from feeding with inosite, phloroglucite, cis-chinite and cyclohexanol, all bodies of the oxyhydro-aromatic type.

87. **Elimination of Aromatic Oxyacids in Nephritis.**—The metabolic findings in forty-five patients, including twenty-one with nephritis, and in thirteen healthy persons are given in a four-page table, with special reference to the elimination of the aromatic oxyacids. In six of the nephritis cases the elimination was within normal range, but in most of the others the reduction below the normal figure was most striking. The reduction in the elimination of the oxyacids in severe nephritis does not depend on the amount of urine voided. There is evidently retention of these substances in the blood, giving warning of impending uremia.

89. **Cleavage of Tyrosin by Bacteria.**—The bacteria used in the tests with racemic tyrosin were the proteus and the subtilis.

91. **Thymotoxic Serum.**—Ogata injected rabbits with an emulsion of dog thymus, and thus obtained a thymotoxic serum which he tested on young dogs from ten to sixty days old. Control animals were injected in the same way with normal rabbit serum. The thymotoxic serum was injected subcutaneously during fifteen days. Photographs of the thymus from the dogs afterward show a remarkable difference between the experimental animal and the control, the thymus weighing only 0.75 gm. in the former and 3.8 gm. in the control in one pair. The proportion to the body weight was 1:1,560; in the control animal, 1:376. In another group the thymus weighed 1.3 gm., and 10.2 gm. in the control, the proportionate weight being 1:1,760; 1:313 in the control. In addition to the atrophy and dwindling of the thymus gland, the experimental animals showed smaller and frailer bones than the controls, and their bones contained considerably less calcium and phosphates than in the controls. The serum of rabbits injected with dog ovarian tissue failed to display any action on the thymus gland. The thymus-toxic serum seems thus to be strictly specific.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

April 21, I, No. 16, pp. 1257-1336

93 *Infant Welfare Work in the Netherlands. (Zuigelingenbescherming.) G. van Rijnberk.—p. 1262.
94 War Surgery. (Over oorlogschirurgie.) D. R. van der Goot.—p. 1266.
95 *Causes of Nervous Affections. (Oorzaken van zenuwziekten.) J. W. Langelaan.—p. 1280.
96 Case of Otogenous Pyemia without Sinus Thrombosis. Recovery. C. Huyer.—p. 1285.

93. **Infant Mortality in the Netherlands.**—Van Rijnberk cites statistics to the effect that the infant mortality in the Netherlands for the first ten years of the century was 114 per thousand born living. The country thus stands fifth on the list, only Norway, Sweden, Ireland, Denmark and Scotland showing a lesser mortality. The northern provinces of the Netherlands have the lowest infant mortality, only 61.5, while in the southern region it was 131.5 per thousand. By 1910, the total infant mortality had dropped to 104 per thousand, and it has declined since to 84.5 in 1916. The mortality is higher in towns of 5,000 or less, averaging 95.6; from 5,000 to 20,000, 89.3; from 20,000 to 50,000, 82.1; from 50,000 to 100,000, 86.2, and over 100,000, only 62.9 per thousand. These figures show, he reiterates, that better hygienic conditions in the smaller towns and rural districts will have a wonderful effect on infant mortality, as, other things being equal, the crowded cities would have a higher mortality. Breast feeding is not so universal in the Netherlands as is desirable, possibly owing to the abundance of cow's milk.

His figures are taken from the Year Book of the Infant Welfare Association, and this concludes its report with an appeal to have girls taught in the public schools the care of infants. Girls now marry and rear children without the slightest idea how they should be brought up. They experiment and practice on their first child, and the little victim often succumbs while the mother is learning how to care for it. "And for many mothers, alas, it takes more than one child before they learn." Many dismiss the idea as ultra-revolutionary, saying it is not necessary, as the grandmother and neighbor women show the girl mother how and what

to do. But their counsel is more than likely to be ill advised and perpetuate prejudices and harmful practices, so that the baby has an unnecessarily hard time of it the first year. Rijnberk comments that the tendency to have the school supplant the family is a dangerous one, but it is certain that it would be better to teach the girls of the working classes less history and geography, which is only of indirect benefit, and teach them how to care for infants. This would be a direct practical aid to them in later life, for their own or others' infants, and such a course should be compulsory in the upper grades of the public schools.

95. **Causes of Nervous Affections.**—Langelaan states that 56 per cent. were women in his 1,112 cases of disease of the nervous system (Amsterdam). Of the male patients, 30 per cent. had syphilis in the antecedents, and 15 per cent. of the women. Tabes and general paralysis seem to run a milder course in women, and affect more the type of a recurring psychosis. Overwork seemed to be the cause of the nervous affection in 15 per cent. of the women and in 4 per cent. of the men. This is most common in girls working too hard in school, in young employed women, and in women approaching the menopause with the care of a large family. He has noticed that women who worked at some time in a factory or shop are more liable to break down than others under family and household cares later. "This testifies" he remarks, "to the persisting evil effect of industrial occupation for women." Another impression he has derived from his experiences is that this tendency in women to nervous breakdown under overwork is connected in some way with the thyroid gland. This gland often shows an inherited inferiority, he says, in the blonde portion of the populace. Alcoholism or tuberculosis in the parents seems to be responsible for this. In the cases in which no evidences of abnormal thyroid functioning are apparent, the women were of a darker complexion as a rule. There were evidences of thyroid upset in 18 per cent. of his female patients, and they were probable in another 7 per cent. Next to syphilis and thyroid upset, alcohol is the main factor in nervous affections. Among other bases for this assertion is the enormous consumption of alcohol in the country. The revenue from the tax on spirits in 1916 was 28 millions. Inherited syphilis kills more children early in life. The evil consequences of alcoholism in the parents do not manifest themselves usually until about the age of puberty, and then mostly in the psychic sphere. The judges in the police courts see more of the consequences of inherited alcohol taints than physicians.

Hospitalstidende, Copenhagen

May 16, LX, No. 20, pp. 473-496

97 *Artificial Heliotherapy in Lupus and Surgical Tuberculosis. A. Reyn and N. P. Ernst.—p. 473. Commenced in No. 19, p. 449.

97. **Artificial Heliotherapy in Lupus and Surgical Tuberculosis.**—Reyn and Ernst have been giving electric light baths in lupus and bone and joint tuberculosis since early in 1913, and here report encouraging results in several hundred cases. They found the carbon arc light best for the purpose, and reiterate that it seems to be able to accomplish alone, without climatic factors, as much as the sunlight in a mountain climate. It is an invaluable aid in the treatment of lupus. The work was done at the Finsen Light Institute at Copenhagen, and the lupus was often of many years' standing, rebellious to all other measures. The entire body was exposed to the rays. These general light baths are thus entirely different from the Finsen treatment which seeks to focus as powerful rays as possible on a small area. The aim with the general bath is to have the body absorb as much of the chemical rays as possible. The exposures are for one quarter to half an hour at first, gradually lengthening them in the course of a week or two to two and a half hours. This was he limit for the exposures. Among the 156 lupus patients all were old, rebellious cases except 30 who began treatment for the first time with these general baths to supplement the local Finsen treatment. The results were better in this latter group. The course lasted from four to eight months. It seems best to give the general light baths every second day, with a powerful current. In the tuberculous cases, some did better with a current of 20 amperes, others with 75 amperes. The most striking success was obtained with osteitis and arthritis: in many cases the joint process healed without impairment of function. Nine plates of photographs show the "before and after" aspects of the lesions. Fourteen different classes of tuberculous lesions were treated, and the results are tabulated. The experiences here reported emphasize that the chemical rays are the effectual element in Rollier's heliotherapy, and not the mountain climate, as equally good results were obtained with the carbon arc light. The cure was complete and less time was required, naturally, the earlier the treatment was applied.

They emphasize particularly that these results were obtained on outpatients, nearly all adults, the tuberculous process usually of long standing. They came for their light baths, but otherwise were under the same conditions of environment and occupation as before treatment. Reyn and Ernst also insist that this treatment must be applied by persons with surgical training and insight, knowing when operative aid will promote the healing, and when to refrain from interference. Experiences with the mercury vapor quartz lamp, the so-called "mountain sunlight" lamp, proved it less effectual than the carbon arc light. The latter yields rays of all kinds, while the mercury vapor lamp gives off only the short-waved rays with weak penetrating power. The skin tans under the arc light as under sunlight. The details of twenty-one cases with fistula are given in full.

Hygiea, Stockholm

April 30, LXXIX, No. 8, pp. 369-416

98 Henschen's Theory of Pulsus Bigeminus Is Unphysiologic. E. Zander.—p. 369.

99 *Neutral Solution of Chlorinated Soda in Treatment of Chronic Suppuration. A. Troell.—p. 384.

99. **Hypochlorite Treatment of Suppuration.**—Troell describes his experiences with the Carrel-Dakin technic in treatment of forty-five wounded soldiers in the Swedish military hospital at Vienna. When conditions permitted its application in a thorough manner, the results were highly satisfactory.

Ugeskrift for Læger, Copenhagen

May 3, LXXIX, No. 18, pp. 685-726

100 Chronic Habitual Constipation from the Clinical and Roentgenologic Standpoint. IV. T. E. H. Thaysen.—p. 685. Conclusion.

101 *Exacerbations of Chronic Disease from the Standpoint of Hospitalization. K. Lundh.—p. 695.

102 *Drug Eruption in Infant. S. Lomholt.—p. 699.

101. **Exacerbations of Chronic Affections and Hospitalization.**—The boy of 15 had been in the hospital five different times on account of febrile exacerbations of chronic bronchitis with cough, and mitral insufficiency. There was also situs inversus. Tubercle bacilli were found in the sputum three times in the course of a few months. Lundh takes this case as his text to expatiate on the advantages of treating such chronic patients under supervision at home, or in some outdoor colony or other inexpensive sanatorium. The lad had spent 703 days in all in different hospitals, thus costing the state 3,027 crowns. Looking over the local hospital records has shown that eighty-nine similar cases, all with more or less earning capacity, have been given 38,569 days of hospital treatment. The same or better results could have been attained at the outdoor colony, the patients going at night, with hygienic supervision of the home, while the expense would have been comparatively trivial.

102. **Drug Eruption in Infant.**—The infant was 18 months old. A 10 per cent. mercurial salve was applied for two weeks to patches of eczema back of the ears. Then the dermatitis rapidly became universal and severe nephritis developed, with high fever, 20 per thousand albuminuria, dyspnea and diarrhea. The latter was kept up with compound licorice powder, half a teaspoonful three times a day, and improvement gradually followed. The temperature was normal by the tenth day and recovery then was soon apparently complete. This laxative was given the preference because it contains sulphur. This may combine with the mercurial compounds in the bowel to form an insoluble salt. Sulphur alone would probably have been too heroic for the infant.